

# FLIGHT

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

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## Flight.

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## EDITORIAL COMMENT.

### War Law for Aircraft.

In the April issue of the *Army Review* there appears a most interesting paper on this subject, from the pen of Dr. J. M. Spaight, LL.D., who is a well-known authority on the laws of war. The paper is far too long for us to deal with in all its detail, even if the subject in all its bearings were of sufficient interest to the general body of our readers to justify our so doing, but certain of Dr. Spaight's main conclusions may be of interest to those who are students of the military side of aviation.

Military aviation and the use of aircraft in war are so much in their infancy that the laws governing the whole subject are necessarily vague almost to the point of non-existence, and Dr. Spaight's paper is more directed towards enquiring for a basis of future legislation than discussive of the law as it exists. In common with other authorities, he agrees that the art of aerial navigation has arrived at that stage when it has become essential that the nations should agree upon some sort of common basis for the treatment of belligerent and neutral aircraft within areas in which hostilities are in progress, and that international agreements must be discussed treating of the rights of neutrals and of belligerent aircraft in neutral territories. The subject is a highly technical one, and is mainly inter-

esting to the layman in international law, as showing the enormously important development of flight as shown by the admitted necessity for a consequential revision of the laws of war.

Dr. Spaight discards the theory of the freedom of the air, and holds that the State must retain control of the air above its dominions. That is to say, it must always retain the right to legislate for aircraft using the territorial air, if we may use the term, and must strictly reserve to itself the right to forbid flying over the whole or any part of its territory. Therein he seems to be in conflict with certain other authorities whom he quotes, but in accord with the views of our own Government as expressed in the Aerial Navigation Acts.

How much, indeed, the coming of aircraft has altered the complexion of war, apart altogether from what we know of the services they can render to commanders in the field, may be gathered from this extract from Dr. Spaight's summing up of the questions involved :

"It is probable that the use of aircraft in war will give rise to new problems regarding armistices, *parlementaires*, military occupation, and the form of indicating surrender. There is no reference to any of these questions in the literature of aerial war law, but they are all questions, I think, which, while they will require for their settlement some experience of the new arm in actual war, will have sooner or later to be considered by soldiers and jurists. In armistices, for instance, it would be easy for the aircraft on each side, without going beyond the advanced lines, to spy out whatever is happening within the other lines if the zone of demarcation is not a very wide one. In fact, there will be similar questions to that which arose in 1878, when Todleben erected high observation posts along his lines during the armistice of San Stefano, and Fuad Pasha, fearing that his troops' entrenchments would be overlooked, threatened to open fire on the posts if they were not removed. Perhaps, where the zone of demarcation is necessarily a narrow one, it will be necessary, in arranging the terms of the armistice, for the commanders on each side to agree not to send up their aircraft during the suspension of hostilities.

"The difficulties in connection with *parlementaires* and military occupation will be, in the former case, that an aircraft coming with a flag of truce would have an opportunity of observing the enemy's dispositions, and, in the second, that there may be a tendency to consider a territory effectively occupied if it is visited by an occasional aircraft representing the authority of a, perhaps, far distant

enemy commander. It will probably be found necessary either to declare aircraft ineligible as *parlementaires* or to enforce a strict rule that they must land (and the airman be blindfolded) at a considerable distance outside the lines of the troops to whom the flag of truce is sent; and military occupation will probably not be considered effective unless the aircraft are supplemented by some land forces—mobile columns, &c."

The paper is an absorbingly interesting one, which will certainly well repay close study by all who happen to be interested in this exceedingly wide question.

## The New Secretary for War.

Of the political events of the past week or two, and of the situation which led to the retirement of Col. Seely from the position of Secretary of State for War, there is no need for us to speak. This is not a political journal, and, therefore, has no concern with these matters. It is permissible, however, for us to express some little regret at the manner of Col. Seely's retirement from office, for the reason that, although we have during his term at the War Office often had occasion to criticise the policy, of which he was the responsible director, with regard to matters connected with aerial defence, we nevertheless feel that he had really come to regard the subject with sympathetic appreciation of the necessities, and was doing his best to evolve a workable system. It may be unfortunate that under our present system of government it is the Minister who has to shoulder the responsibility for acts of commission or omission, which have often to be given, for political or economic reasons, an atmosphere of being other than they are in fact—unfortunate, that is from the point of view of the Minister concerned. As a consequence he has to take the blame for a good many things the criticism for which ought more properly to rest upon other shoulders, but on the other hand he will often receive praise for things which are not initiated by him and of which he may possibly not even approve. In the matter of aviation, however, we believe that Col. Seely really took a keen personal interest, and even if at times he found it

expedient to enunciate statements which did not always coincide with the facts, we nevertheless credit him at heart with the sincere desire to set our aerial defences on a satisfactory basis. To that extent we can regard his retirement as a national loss—not irreparable, perhaps, but a loss nevertheless.

We doubt not that the Prime Minister, who has taken over the vacant office, will manifest the same keen interest in the subject that, for the purposes of this journal, most concerns us. There is one matter that we would impress most strongly upon Mr. Asquith, and that is that he should take to heart the words we addressed to his predecessor in our Editorial article of the 28th ult., with regard to the accidents which have happened in the Military Wing of the R.F.C. In the officers and men of that branch of the Service, right up to the head of this new great national asset, we have a magnificent *personnel*, keen, skilful, and prepared to encounter any risks in the service of the State. We cannot afford to allow them to run unnecessary risks by supplying them with machines that are faulty in design or construction or which have been repaired in an unskilful and slipshod manner. They risk enough for us as it is, and in return it is surely up to the country to see that they are given nothing but the very best and soundest equipment that can be obtained; and if, unfortunately, similar accidents should in the future occur arising out of similar causes to those we commented upon in the article mentioned, we do not want to hear again that *someone unknown* carried out a faulty repair at some time and place both of which are undiscoverable. Such things as this must give rise to the gravest of misgiving with regard to the organisation existing in the constructional service. Apart from any question of preventing such occurrences in future, we would remind the new War Minister that those to which reference has already been made have not been satisfactorily explained, nor has any responsibility for them been fixed. We trust that Mr. Asquith will hurry on the enquiry which his predecessor in office announced would be held.

## ROBERT THELEN.

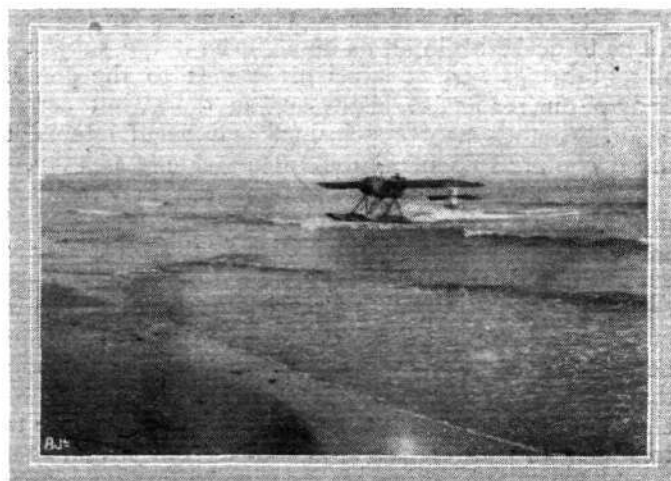
Not only is Robert Thelen one of the most prominent of German pilots, but he is also one of the pioneers, for his certificate is numbered 9, and he was the third to learn on a Wright biplane in Germany. For a considerable time past he has been flying the Albatros biplane, and it

is in order to demonstrate this type of machine to the British Government officials that he is at present in England. It will be recalled that he holds the world's height record for pilot and three passengers with 3,750 metres.

THE HAWK.



Major Gordon, R.F.C., N.W., flying Short 42 at the Leven Air Station. A snap from the passenger's seat at 2,000 ft.



Lieut. Oliver, R.F.C., N.W., arriving at Leven from Dundee on Borel 89 in dirty weather.



APRIL 11, 1914.

FLIGHT

## MEN OF MOMENT IN THE WORLD OF FLIGHT



HERR THELEN.

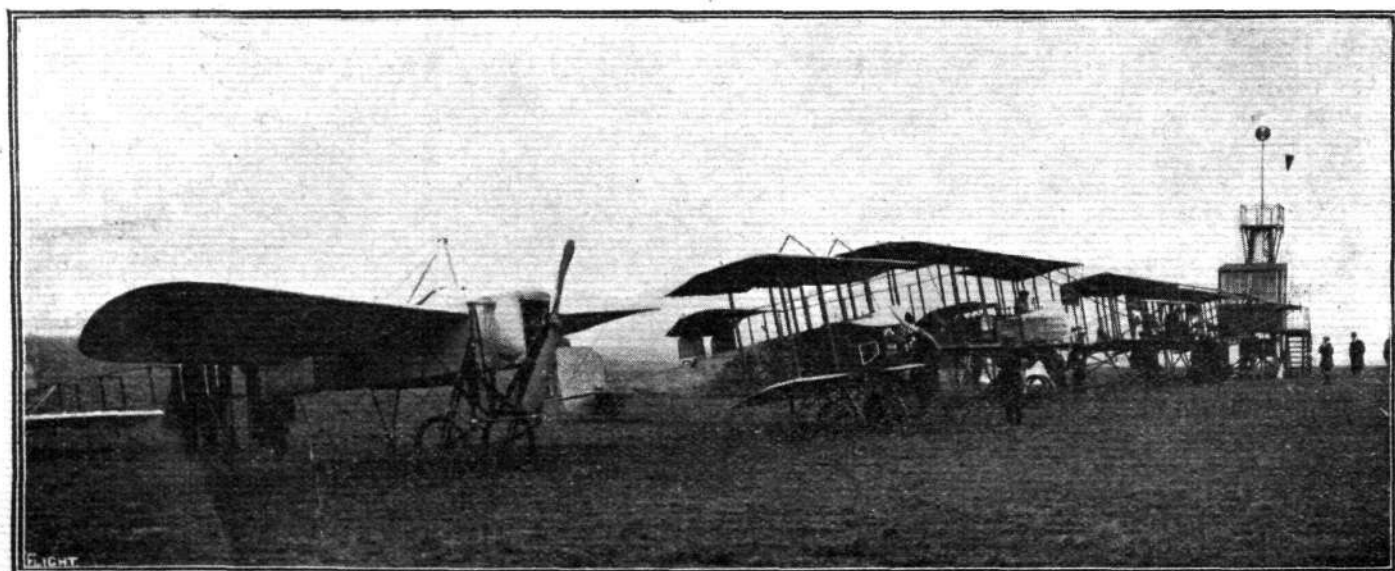
## FLYING AT HENDON.

SOME more looping demonstrations took place at Hendon on Thursday afternoon of last week, in fact the proceedings were opened punctually at 3 o'clock with a looping display by R. H. Carr on the Grahame-White tractor biplane "Lizzie." He made his first two loops at a height of about 1,000 ft., following these up with three more at altitudes varying from 800 to 600 ft. Closely following on Carr's ascent came L. A. Strange on the G.-W. 'bus 109, Louis Noel with a lady passenger on the Maurice Farman, and W. Birchenough on the other G.-W. 'bus. After Strange had made his flight he handed the 'bus over to N. Howarth, who put up several circuits of the aerodrome in excellent style. Noel then made two more flights on the Maurice Farman, whilst E. F. Norris went up on 'bus 109, and Birchenough took up a passenger on the other 'bus. Another flight was then made by Howarth on the 'bus, whilst Carr put up some more looping on "Lizzie." He made four separate loops at heights varying from 800 to 600 ft. In the meanwhile F. W. Goodden was testing a new British-built Caudron fitted with a 60 h.p. Anzani engine, and R. J. Lillywhite and Birchenough, the latter with a passenger, went up on the 'buses. J. L. Hall next came out on his 50 h.p. Avro, and Birchenough climbed to an altitude of 3,000 ft. on the bi-rudder 'bus, and switching off his engine at this height he made a splendid descent with his propeller only revolving very slowly. Strange then ascended on "Lizzie," and climbing to a height of 800 ft. he executed a double loop, and a single one shortly after, and then descended. Hall now started a series of passenger flights on the Avro, at one time taking up two together. Carr took over "Lizzie" once again, and made three more loops, after which he took up a passenger, whilst Noel made a combined switchback and pancake glide on the Maurice Farman with the writer as passenger. By now the evening was advancing, but several more flights were made by Lillywhite, M. Osipenko, Birchenough, and R. T. Gates on G.-W. 'buses. Noel on the Maurice Farman, and several of the 35 h.p. Deperdussin monos. were hopping about piloted by Barrs, Millar, and Whitehouse, whilst P. Marty was testing an old 50 h.p. Blériot.

The feature of the April Meeting last Saturday was the speed handicap for the London Aerodrome Cup, in which some of the newer G.-W. pilots distinguished themselves. Earlier in the afternoon the weather was somewhat overcast and a light south-westerly breeze made it ideal for flying, but whether it was owing to the omnibus strike at Hendon or the Home Rule demonstration in Hyde Park, there was not such a large attendance as usual. The proceedings were opened at about 3 o'clock with some exhibition flights by Louis Noel with a passenger on the Maurice Farman, L. A. Strange, W. Birchenough, J. M. Cripps and R. J. Lillywhite on G.-W. 'buses, J. L. Hall on his 50 h.p. Avro and R. H. Carr on "Lizzie," who executed a loop at about 800 feet. F. W. Goodden then came out on the new British-built 60 h.p. Caudron and put up a very fine flight. Three ladies then went up as passengers, two going up with Birchenough on the bi-rudder 'bus and one going with Goodden on the Caudron; Carr also took up a passenger on "Lizzie," and E. F. Norris made a solo flight on 'bus 109. A start was then made for the speed handicap, which was flown in two heats of four laps each and a final

of six laps. As there were more pilots than machines it had to be arranged that the losing machines in the first heat would be flown in the second by other pilots. The first heat was made up as follows: J. M. Cripps on 'bus 109 (2 mins.); L. A. Strange on 'bus 107, which has just been overhauled (1 min. 52 secs.); W. Birchenough on the bi-rudder 'bus (1 min. 37 secs.); F. W. Goodden on the 60 h.p. Caudron (35 secs.); and R. H. Carr on "Lizzie" (scratch). Cripps maintained the lead until towards the end of the last lap, when he was passed by Goodden, who came in first by one second. Birchenough, who passed Strange on his second lap, came in third, 1 sec. behind Cripps, and 6 secs. in front of Carr. Strange's renovated 'bus was not so fast as was expected, so he had to bring up the rear. Four started in the second heat, N. Howarth on 'bus 107 (2 mins. 25 secs.); R. J. Lillywhite on 'bus 109 (2 mins. 2 secs.); R. H. Carr on the bi-rudder 'bus (1 min. 33 secs.); and J. L. Hall on his 50 h.p. Avro (scratch). The finish of this heat was not so exciting as the first, as the wind had increased considerably, which rather upset the hand-capping. Hall came in an easy first, with Lillywhite, who flew with considerable skill, second, and Howarth, another new pilot who flew his first race in fine style, third, whilst Carr followed only  $\frac{3}{4}$  sec. behind. The finish of the last heat proved quite exciting, for Hall was just about to pass Lillywhite—who flew even better than before—on the home straight, when the control wire of the throttle broke, and he had to make a very hurried landing right opposite his hangar, fortunately without mishap. Lillywhite, therefore, came in first, thus winning the Aerodrome Cup in his first race. Goodden found his handicap of scratch too severe, and only just managed to obtain second place from Cripps by 5 secs. After the race, Goodden demonstrated to the writer the flying qualities of the new Caudron by taking him up as passenger. We climbed to an altitude of about 1,000 ft. in a remarkably short time, and very steadily, in spite of the fact that the wind was by now unpleasantly puffy. The machine is also very free from vibration, and judging from the zig-zag *vol plané* by which we descended it glides extremely well. A few more flights by Goodden and Hall brought the meeting to a close, but at 6.50 p.m. Gustav Hamel arrived accompanied by a passenger on his 80 h.p. Morane-Saulnier, which had been "spring cleaned" and looks like a new machine with its white wings. On landing, the machine very nearly came to grief, for it had all but come to a standstill when it swerved and made for the enclosure, only stopping within a foot or so of the railings. Hamel informed us that he and his passenger, Capt. Robin Duff, had left Bath just under an hour ago, and had had an extremely pleasant journey. The distance from Bath to Hendon is nearly 100 miles, so that they had made very good time.

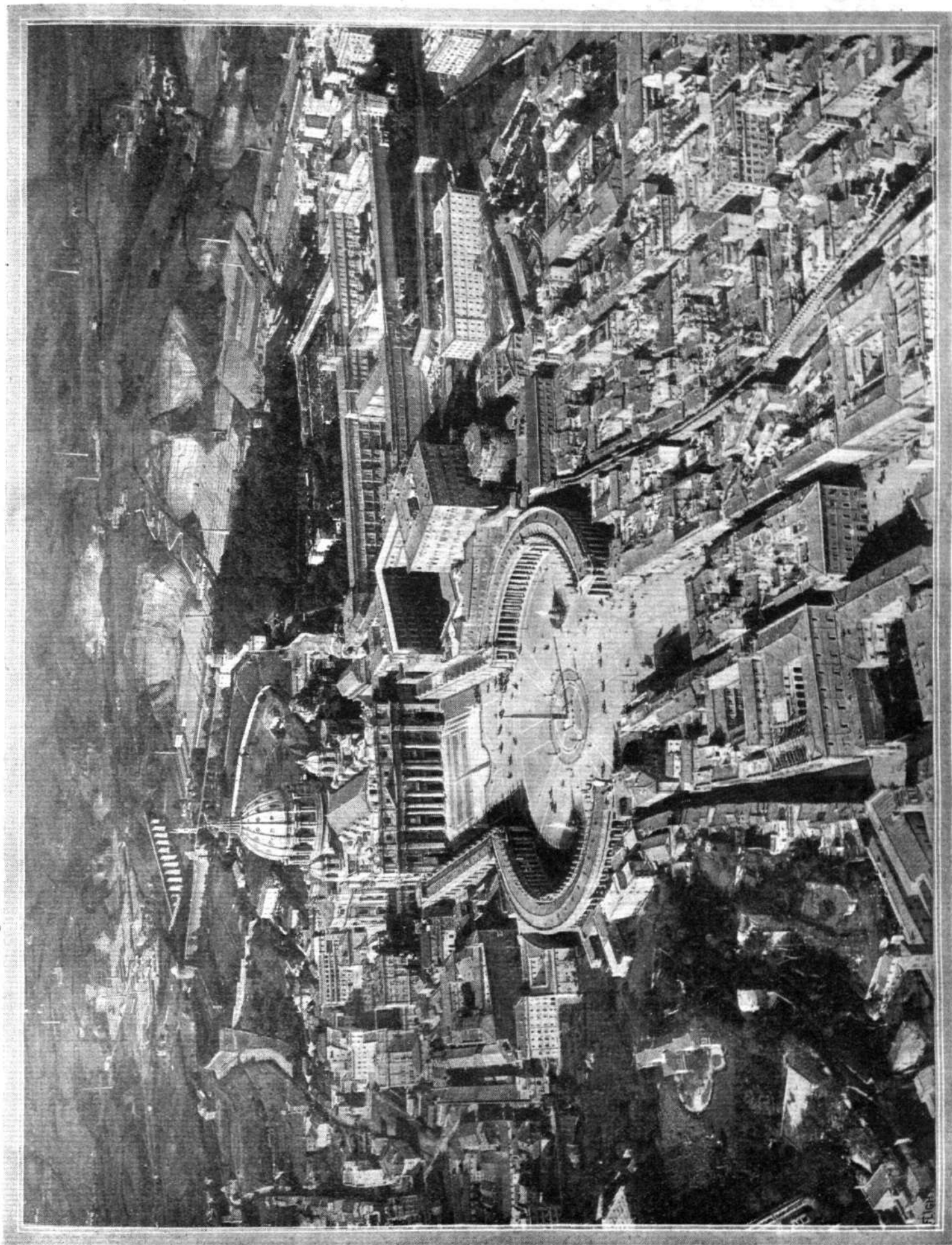
Some fine flights were put up on the Sunday afternoon, including looping displays by R. H. Carr on "Lizzie," and Gustav Hamel on his Morane-Saulnier. F. W. Goodden made a splendid 20-minute flight on the new 60 h.p. Caudron, reaching an altitude of 9,000 ft. During the afternoon Claude Grahame-White carried as passengers on the Maurice Farman, the Countess of Essex, and Miss Ethel Levy. Several other flights were made by Louis Noel on the Maurice Farman, W. Birchenough and L. A. Strange on G.-W. 'buses.



A start for a cross-country race at Hendon Aerodrome with the opening of the present season.

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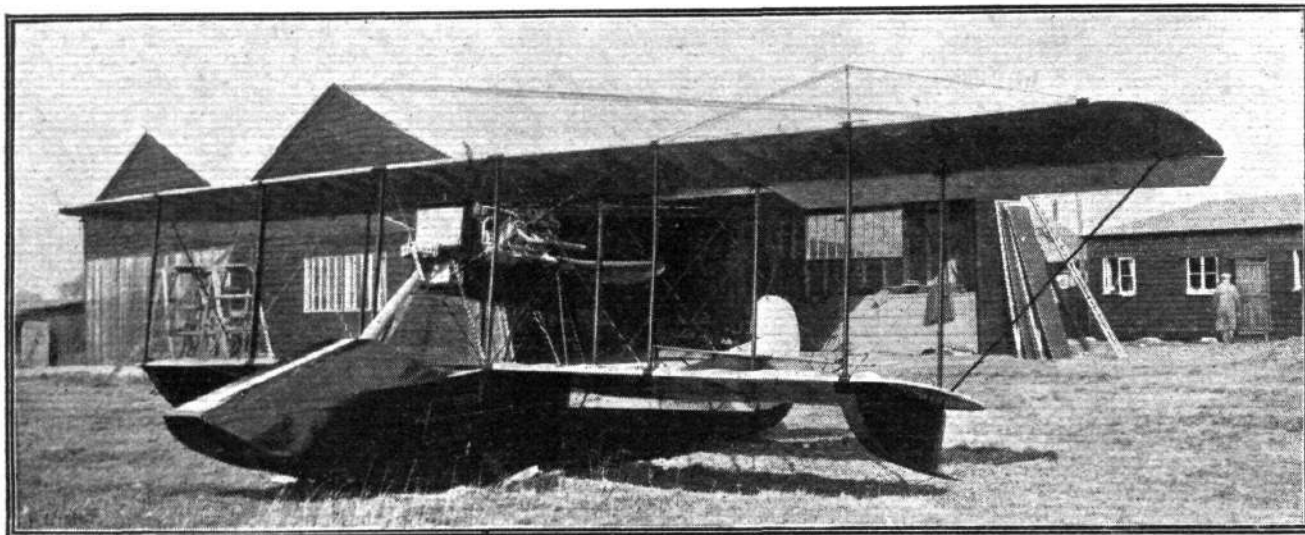


A splendid view of Rome from above, as seen from the Forlanini airship.

## THE 100 H.P. CURTISS FLYING BOAT.

WE have from time to time had occasion to describe various types of Curtiss flying boats. The subject of our scale drawings this week is the 100 horse-power English

known Curtiss type, having a rather wide nose and tapering to a short vertical knife's edge at the stern. In the nose the bottom of the boat is perfectly flat, running

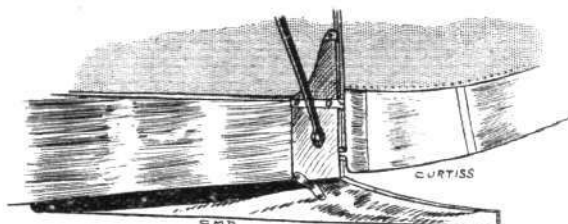
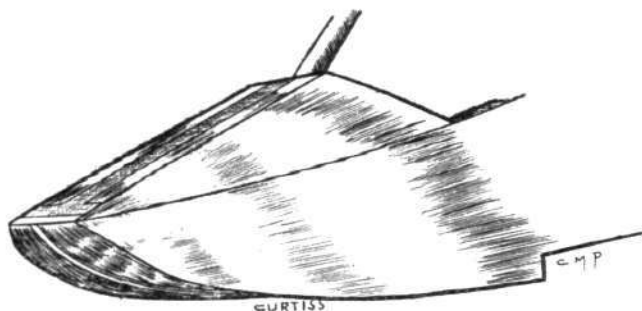


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THE 100 H.P. CURTISS FLYING BOAT.—Three-quarter view from in front.

Curtiss flying boat, the rights for which, it will be remembered, are held by Messrs. White and Thompson, of Bognor. Since his return from the States, Lieut. J. Porte

gradually into a V bottom at the step, whilst the rear portion of the hull behind the step is flat. The sides of the boat slope outwards in the front portion, and there is

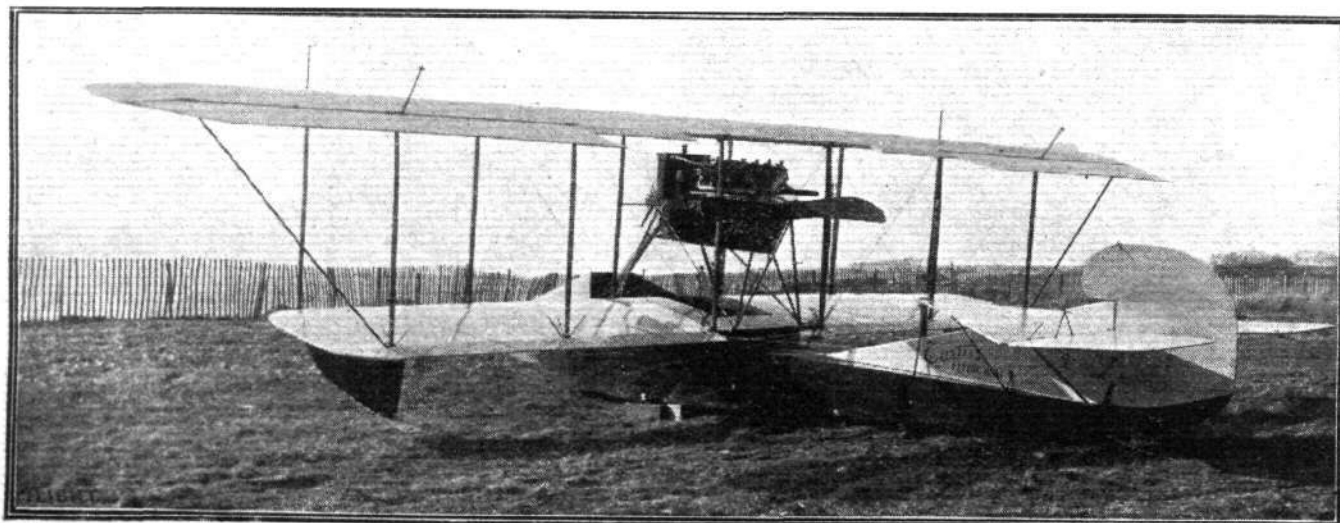


The nose of the Curtiss flying boat, and on the right the tail skid.

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has, we understand, been testing this machine, and she appears to be well up to the usual high standard of sea and air worthiness which has made these machines so popular in America. The boat itself is of the usual well-

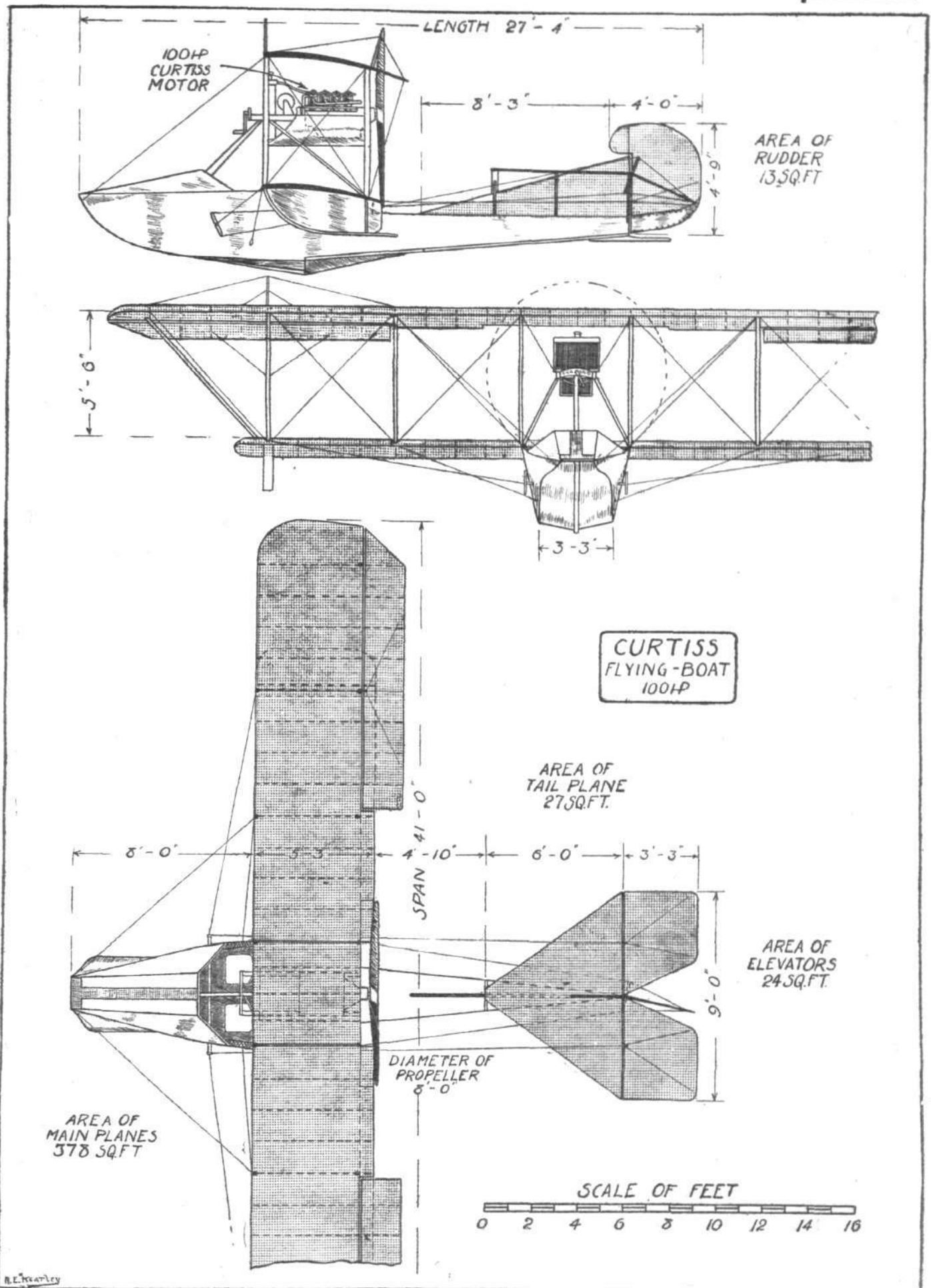
an unusually high freeboard, which protects the occupants against water spray. From the nose of the boat a superstructure forming a wind shield runs back to a point just in front of the pilot's seat.



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THE 100 H.P. CURTISS FLYING BOAT.—Three-quarter view from behind.



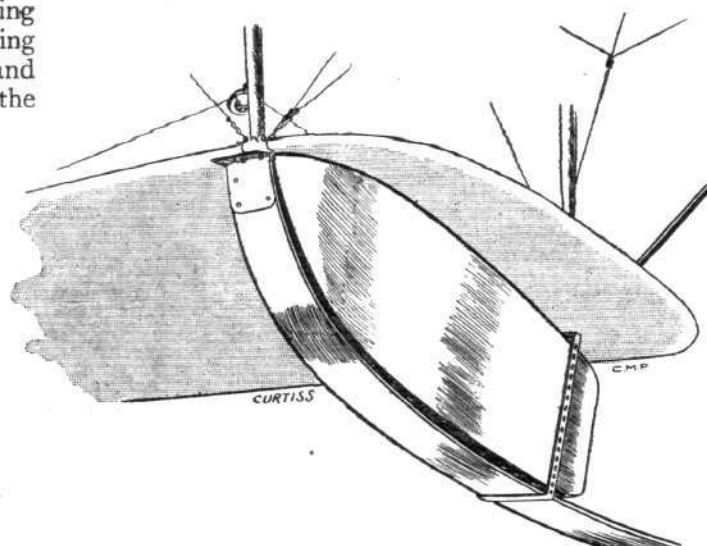
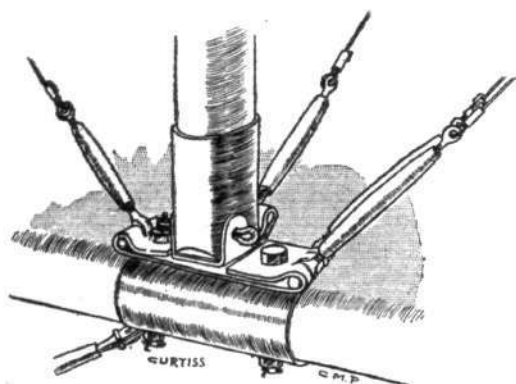


THE 100 H.P. CURTISS FLYING BOAT.—Plan, side and front elevation to scale.

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Constructionally the boat is built up over a framework of ash, spaced on three-inch centres, mortised at the corners, fitted with copper corner straps and each frame securely fastened with sixteen copper rivets. Longitudinal ribs or battens of one-inch square ash are run throughout the whole length of the hull. The sides of the boat are covered with a planking consisting of two layers of mahogany, whilst the bottom is triple-sheathed with first a planking of  $\frac{5}{16}$  in. mahogany, then a covering of heavy canvas set in marine glue and an outer planking of  $\frac{1}{4}$  in. mahogany. This planking runs diagonally, and extends back to the step only, the rear portion of the

between the leading edge and the rear spar at the lower main plane. The pilot's cockpit is unusually roomy and comfortable, and the view obtained from there is practically unobstructed in all directions. Dual control is fitted, and consists of two rotatable hand wheels, each mounted on a short forked arm which joins the vertical tubular column. This in turn is mounted on a transverse rocking-shaft projecting outside the sides of the boat,



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One of the inter-plane strut sockets of the Curtiss flying boat, and on the right one of the wing tip floats.

hull taking only a slight part of the load in rising and alighting. Eight bulkheads divide the boat into watertight compartments, so that it is practically unsinkable, for any two of the compartments are claimed to possess sufficient buoyancy to keep the entire machine afloat.

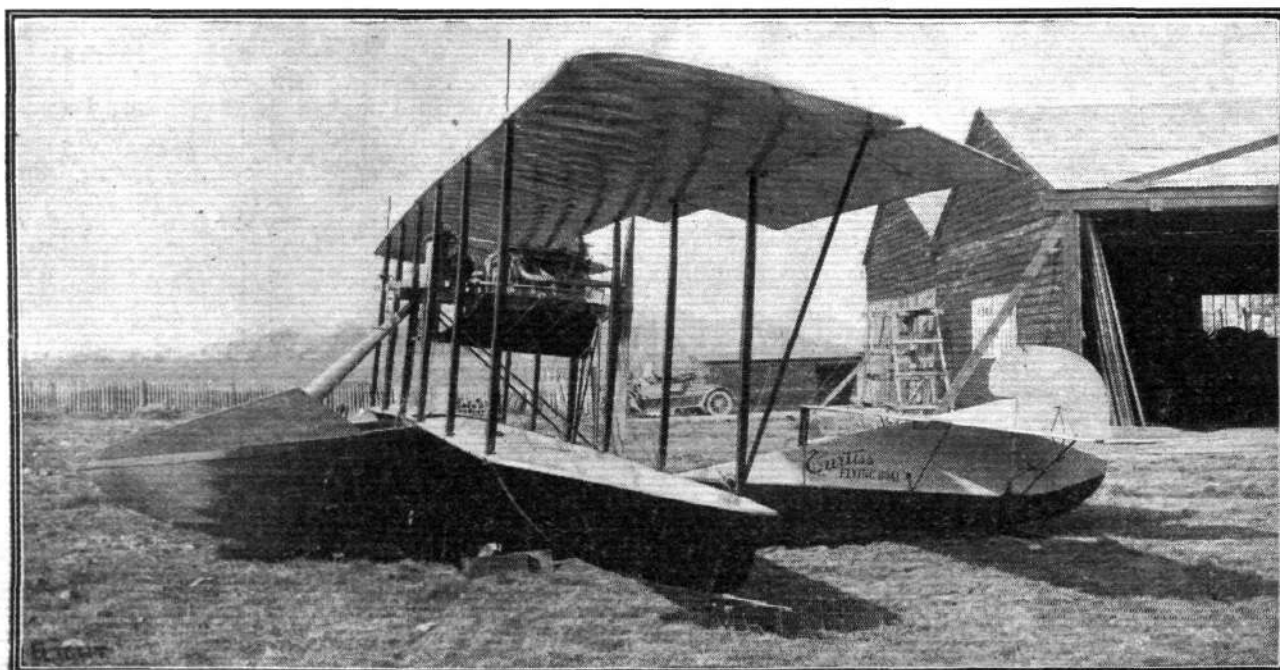
The workmanship as well as the finish of the boat is of a very high quality, and one regrets that Messrs. White and Thompson could not find the time to exhibit the machine at the recent Olympia Aero Show, where it would certainly have attracted a great deal of attention.

Two sets of seats are provided—one set for the pilot, or rather pilots, arranged side by side in front of the leading edge of the lower main plane, and another set

where are carried the crank levers from which cables run to the elevator. The rudder is operated by means of a pivoted footbar.

The lower plane is bolted to the gunwales of the boat from which it is stayed by means of cables. Six pairs of inter-plane struts of spruce separate the main planes, of which the upper one possesses a considerable overhang, the weight of which is taken, when the machine is at rest, partly by a steel tube running from the lower end of the outer rear strut to the end of the extension and partly by cables passing over a king post above and on the front spar of the wing.

It will be remembered that the usual Curtiss lateral



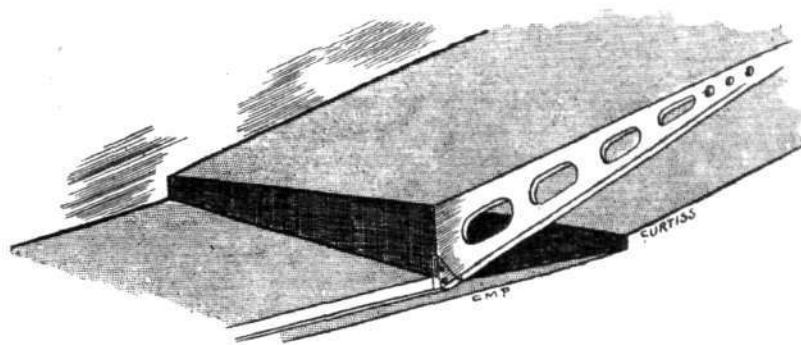
THE 100 H.P. CURTISS FLYING BOAT.—Side view.

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control consists of two *ailerons* mounted on the struts in the gap between the planes. In this machine *ailerons* of a more orthodox type are fitted to the trailing edge of the outer portion of the upper main plane. From the accompanying scale drawings of the machine it will be seen that the two main spars are set very far apart, the front one forming the leading edge whilst the rear one is placed very close to the trailing edge of the wing.

Metal floats of the shape shown in one of the accompanying sketches prevent the wing tips of the lower main plane from cutting under. The bottom of these floats is



View from underneath of the step in the Curtiss flying boat. "Flight" Copyright.

protected against too harsh a contact with the water by means of a spring board which is secured to the nose of the float, but the rear end of which is allowed a certain amount of play in the manner shown in the sketch.

An extension of the stern post of the hull serves as a support for the partly-balanced rudder and the vertical fixed tail fin. The lower portion of the rudder is covered with wood and copper bound in order to allow of steering the machine at low speed on the water. A tail skid or skeg protects the tail planes when the machine is being beached. The fixed tail plane, which is triangular, as seen in plan, is carried on a structure of steel tubes secured to the rear portion of the hull, and to its trailing edge is hinged the divided elevator.

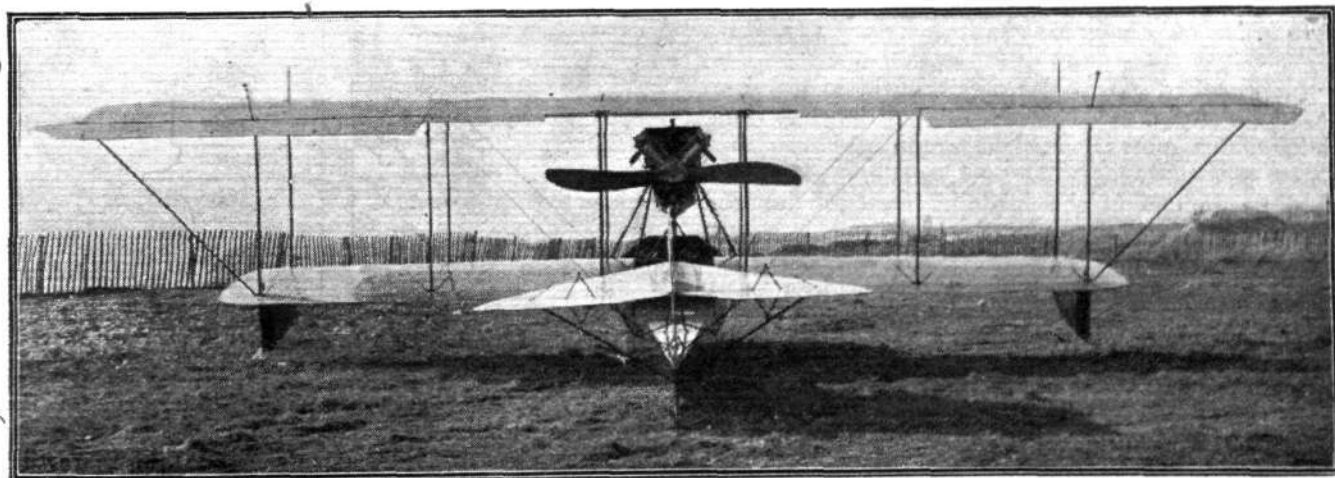
An outside keel in the form of a wooden strip runs along the entire length of the boat, thus protecting the bottom when running the machine up on the beach, and it is even possible, we understand, to run the machine from the hangar down to the beach by taxiing along the grass on this keel.

The engine, a 100 h.p. 8-cylinder V-type Curtiss, is mounted on two longitudinal ash bearers supported on a structure of welded steel tubing between the main planes. It drives directly a Curtiss propeller situated immediately behind the rear spar of the upper plane, the trailing edge of which has been cut away to provide clearance for the propeller. A very stout oblique strut runs from the engine bearers down to the bottom of the forward portion of the boat, the purpose of this strut obviously being to transmit the momentum of the engine to the boat on alighting.

The main petrol tank is situated in the boat under the rear pair of seats, whence it is forced to a small service tank between the radiator and engine by means of a small pump driven off the engine. The radiator is mounted immediately in front of the engine on extensions of the longitudinal engine bearers, and projecting in front of it is a starting-handle by means of which the engine can be started from the pilot's seat. It should be noted that this starting-handle does not clear the oblique strut, as it would not be possible from the pilot's seat to give the starting-handle a whole turn. For starting the engine the handle is simply put in a position slightly above the horizontal and pulled down smartly, an operation which is generally sufficient to get an explosion in one of the cylinders.

The speed of the machine with full load is about sixty miles per hour, whilst we understand it is possible to taxi it along the water at any speed up to forty miles per hour.

When taxiing at this speed only a small portion of the hull just in front of the step is in contact with the water.



THE 100 H.P. CURTISS FLYING BOAT.—View from behind.

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#### Easter Monday Aeroplane Race at Brooklands.

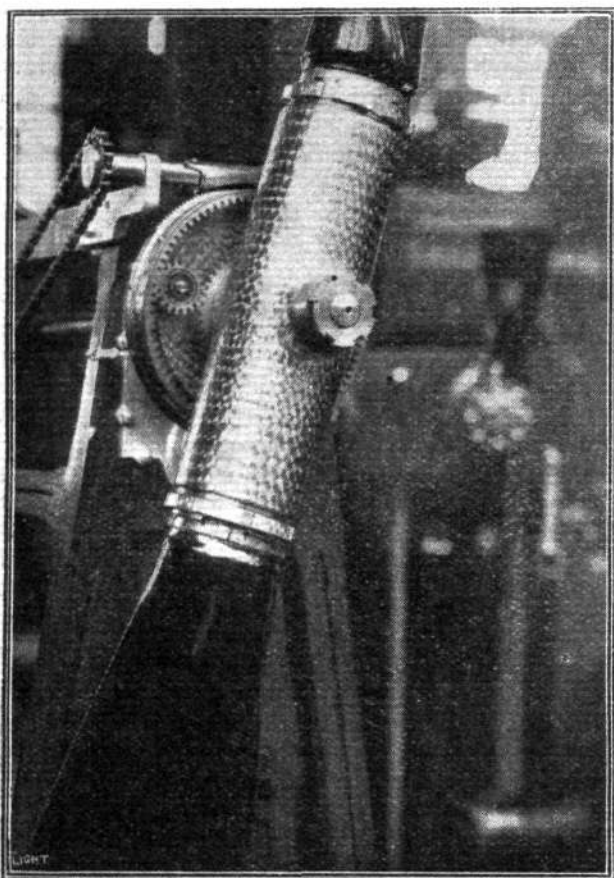
TWELVE entries (six from the Vickers Company) have been received for the Easter Aeroplane Handicap to be flown at Brooklands on Easter Monday, including a "tabloid" Sopwith biplane (C. H. Pixton), an 80 h.p. Sopwith biplane (F. P. Raynham), the new Martinsyde monoplane (Mr. Waterfall), the new 100 h.p. Vickers gun-carrying biplane (R. H. Barnwell), the Sunbeam-engined M. Farman (J. Alcock), and a Bristol biplane (F. W. Merriam).

#### Extensions at Brooklands.

THERE has been a great demand for sheds recently at Brooklands, the Blériot Co. (whose factory is now working at full pressure) leading the way with a further batch of five, whilst Mr. Kny has secured more accommodation for his D.F.W. and other machines, and Messrs. Martin and Handasyde, the Bristol Co., and the Perry-Beadle Co. have likewise taken over more hangars. It will thus be seen that the prospects for the coming season are very bright.

# THE INTEGRAL VARIABLE PITCH PROPELLER.

AN exhibit of considerable interest at the recent Aero Show at Olympia was to be seen on the stand of the Integral Propeller Co.—the new variable pitch propeller, which is intended principally for use on airships. In this propeller the blades are not formed in one piece with the boss, as is usual, but are mounted in a metal hub keyed



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**THE INTEGRAL VARIABLE PITCH PROPELLER.**—Note the extremely compact form of the pitch-adjusting mechanism.

on to the propeller shaft. The details of the mechanism employed are shown in the accompanying drawing, from which its compactness is clearly apparent.

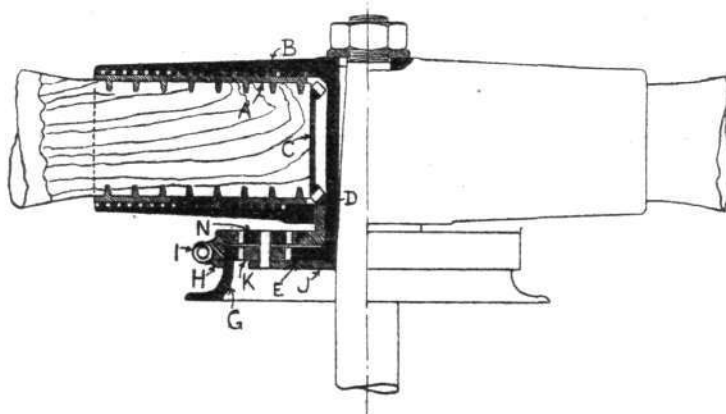
A steel sleeve, A, threaded on the exterior, is rigidly attached to the end of the blade by means of the projections into the wood shown in the sketch. This sleeve is screwed into the interior of the boss, B—mounted on the driving shaft, and at the end of the blade a bevel pinion, C, is fitted, meshing with the second bevel wheel, D, which is concentric with the axis of rotation. A double planetary system of gearing then connects the tooth rim of the boss, at E, and the pinion, D, at F, with two annular toothed wheels, H and G—the two sets of planet wheels being mounted upon a floating plate, J, whilst a worm gear, under the control of the pilot, is fitted so as to mesh with the wheel, H. The annular wheel, G, is rigidly attached to the crank case of the motor or other fixed portion of the machine.

When the propeller is driven by the engine the wheel, D, is carried round by the wheel, C, and with the hub and wheel, E, are rotated bodily as one piece about the axis of the driving shaft, thus causing the wheels, K and N, to rotate on their axes and roll round the interior of the annular wheels, G and H, at a reduced speed. From the

fact that the wheels forming each pair of gears, E and F, G and H, and K and N, are of the same diameter, this rotation does not produce any change in the relative position of the blade to the plane of rotation, and as the axis of the sleeve, A, is coincident, or nearly so, with the line of centre of pressure on the blade surface for all working angles of incidence, there is little or no tendency for the air pressure to cause the rotation of the sleeve. The gear wheels employed therefore serve simply to locate the blade in the hub, and are not subjected to heavy loads due to the air pressure.

To vary the pitch of the propeller, the worm, I, is rotated (this can be and is readily done whilst the propeller is in motion), which causes the relative position of the wheels, H and G, to be altered. Since K is meshed with G—a fixed wheel—K and E receive no movement, due to the angular displacement of H, but N is made to rotate about its axis, and causes F to move C through D relative to the hub, B, thus altering the angle of the propeller-blade. It will be observed that the rotation of the sleeve and blade by the wheel, D, tends to withdraw the teeth in C from those in D; but its effect is quite negligible, as the angle of movement is so small and the thread on the exterior of the sleeve sufficiently fine, that in practice the amount of withdrawal only amounts to about one-hundredth of an inch.

The advantages to be derived from the use of this propeller for airship work are readily obvious, as, by reversing the propeller, it permits of the employment of the engine to arrest the forward motion of the airship; whilst at high altitudes, where the density of the atmosphere is reduced, it is possible to increase the pitch in order to maintain the engine revolutions and thus increase the speed of the vessel. It is understood that this particular form of the Integral propeller has already been adopted by a large



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**Sectional drawing showing the internal mechanism of the Integral variable pitch propeller.**

number of airship constructors in the place of their ordinary propeller, which has been so extensively employed on aircraft of all types throughout the world.



## Flying School for India.

REPLYING to a question in the House of Commons on Tuesday, Mr. C. Roberts (Under Secretary for India) stated that an aviation school had been established at Sitapur. The present personnel included a commandant and three other flying officers, with the necessary medical and subordinate staff. There were three aeroplanes, and five others had been ordered. The immediate object was to gain experience in aviation under Indian conditions with a view to the eventual expansion of the school as a training establishment. One Ruling Chief, the Maharaja of Rewa, had generously presented an aeroplane.



# The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

## Committee Meeting.

A MEETING of The Committee was held on Tuesday, April 7th, 1914, when there were present: The Marquess of Tullibardine, M.V.O., D.S.O., M.P., in the Chair, Capt. R. K. Bagnall-Wild, Mr. Griffith Brewer, Mr. Ernest C. Bucknall, Mr. G. B. Cockburn, Major J. D. B. Fulton, C.B., R.F.A., Prof. A. K. Huntington, Major F. Lindsay Lloyd, Mr. F. K. McClean, Mr. J. T. C. Moore-Brabazon, Mr. C. F. Pollock, Mr. Mervyn O'Gorman, C.B., Com. C. R. Samson, R.N., Mr. A. Mortimer Singer, and the Secretary.

**Election of Chairman.**—On the motion of Prof. A. K. Huntington, seconded by Mr. A. Mortimer Singer, the Marquess of Tullibardine, M.V.O., D.S.O., M.P., was unanimously elected Chairman of the Club.

**Election of Vice-Chairman.**—On the motion of the Marquess of Tullibardine, M.V.O., D.S.O., M.P., seconded by Mr. C. F. Pollock, Col. H. C. L. Holden, C.B., F.R.S., was unanimously elected Vice-Chairman of the Club.

**New Members.**—The following new members were elected:—George G. Astley, R. W. B. Billingham, Lord Carbery, Edwin C. Carnt, Charles E. Castellan, Lieut. Thomas Scholes Creswell, Robin G. V. Duff, John H. Edgelow, Lieut. Com. Harry Macleod Fraser, R.N., Lieut.-Col. John E. G. Groves, George Marchetti, Eugene H. Posen, T. Foster Rutledge, G. Farquhar Singer, William Chalmers Stewart, and Pierre Verrier.

**Aviators' Certificates.**—The following Aviators' Certificates were granted:—

- 751 Lieut. Henry Allen Edridge-Green (6 D.C.O., Middlesex Regt.), (Grahame-White Biplane, Grahame-White School, Hendon). March 23rd, 1914.
- 752 Jack Benjamin Graham (Grahame-White Biplane, Grahame-White School, Hendon). March 23rd, 1914.
- 753 Cyril Frederick Lan-Davis (Avro Tractor Biplane, Avro School, Brooklands). March 24th, 1914.
- 754 Lieut. Victor Somerset Erskine Lindop (Prince of Wales' Leinster Regt.), (Grahame-White Biplane, Grahame-White School, Hendon). March 24th, 1914.
- 755 Lieut. Wilmsdorff George Manseigh (Manchester Regt.), (Vickers Biplane, Vickers School, Brooklands). March 25th, 1914.
- 756 Lieut. Arthur Sheridan Barratt, R.F.A. (Bristol Biplane, Bristol School, Salisbury Plain). March 26th, 1914.
- 757 Sergt. Charles Albert Hobby, R.F.C. (Maurice Farman Biplane, Central Flying School, Upavon). March 27th, 1914.
- 758 Capt. Ernest Arthur Hunter Fell (12th Bengal Cavalry), (Bristol Biplane, Bristol School, Salisbury Plain). March 27th, 1914.

759 Leading Seaman Stephen Thomas Clemens, R.N. (Maurice Farman Biplane, Central Flying School, Upavon). April 2nd, 1914.

760 John Bankes Price (Caudron Biplane, Ewen School, Hendon). April 3rd, 1914.

761 Lieut. Athelstan Key Durance George (1st Dorsetshire Regt.). (Bristol Biplane, Bristol School, Salisbury Plain). April 3rd, 1914.

The following certificate was passed in America:—  
H. J. Webster.

## Gordon-Bennett Aviation Race.

The Race for the Gordon-Bennett Aviation Cup will be held from September 19th to the 28th next in France. The three representatives to compete on behalf of the British Empire will be selected from the following:—

A. V. Roe and Co., Ltd.  
Sopwith Aviation Co., Ltd.  
British and Colonial Aeroplane Co., Ltd.  
Vickers Ltd.  
Cedric Lee Co.

The date and place of the eliminating trials will be announced later.

## Jacques Schneider International Maritime Race.

The Race for the the Jacques Schneider International Maritime Cup will be held at Monaco on the 20th inst. The British Empire will be represented by a Sopwith waterplane piloted by Mr. Howard Pixton, and Mr. John Carbery on a Morane-Saulnier.

## Hurlingham Balloon Contests.

Balloon Contests will be held at the Hurlingham Club, Fulham, S.W., this year on the following dates:—

Wednesday	...	...	June 10th, 1914
Saturday	...	...	June 27th, 1914
Saturday	...	...	July 11th, 1914

Full details will be announced later.

## Mr. F. K. McClean and Mr. Alec Ogilvie.

Mr. F. K. McClean and Mr. Alec Ogilvie have returned from their trip up the Nile on a Short waterplane. It will be remembered that they started from Alexandria on January 3rd, and after many stoppages on account of engine troubles reached Khartoum on March 23rd. During the trip through Egypt, a crew of three was carried in addition to the pilot, while through the Sudan, the crew numbered two in addition to the pilot. Thirteen engine breakdowns were experienced and three bad landings were made.

166, Piccadilly, W. HAROLD E. PERRIN, Secretary.

## FROM THE BRITISH FLYING GROUNDS.

### Royal Aero Club Eastchurch Flying Grounds.

MONDAY, last week, very windy, rain evening, no flying.

Tuesday, windy morning, calm evening. There was no flying until late in the afternoon, when the following machines went up: 80 Bristol tractor, 70 Deperdussin, 70 Henry Forman, 80 Short, 80 Le Rhône-Blériot.

Wednesday, fair. Flying nearly all day, the machines up were: 50 Shorts (2), 80 Shorts (2), Blériot, 80 Le Rhône, 70 Deperdussin, 70 (Anzani) Deperdussin, Sopwith.

Thursday, fair. 80 Short, 50 Short, instructional purposes, 70 Deperdussin, 80 Blériot-Le Rhône, Sopwith Avro, 50 Short, 80 Short to Eastbourne.

Friday, fine flying day. The Navy made most of the weather, and some fine flying was seen. The machines up were: 80 Blériot (Le Rhône), 80 Short, 50 Caudron, 80 Sopwith, 50 Avro, 50 Short instruction, 70 Deperdussin-Anzani, 70 Deperdussin-Gnome Bristol tractor.

Saturday, showery. 50 Short instructor, 80 Shorts (2), 70 Deperdussin.

**Civilian Flying.**—The Hon. M. Egerton was out every day on his 50 Short and made some very fine flights. Professor Huntington made a couple of short flights on Saturday.

### Brooklands Aerodrome.

ON Monday, last week, Mr. Barnwell was testing the latest 100 h.p. Vickers gun-carrying biplane.

M. Bidot flew to Farnborough on Tuesday with a mechanic to deliver an 80 h.p. Gnome-engined two-seater Blériot monoplane. In the afternoon Lieut. Collett, R.N., made several flights on the D.F.W. biplane. Mr. Waterfall was out twice on the new Martinsyde monoplane. Mr. Barnwell was on the 100 h.p. Vickers gun 'bus. M. Bidot flew to Farnborough again with a mechanic to deliver another 80 h.p. Gnome-engined Blériot monoplane. The Vickers and Bristol schools were both busy.

On Wednesday, Mr. Barnwell was further testing the new Vickers gun-carrying biplane. Mr. Waterfall made two good flights on the Martinsyde monoplane with well-judged spiral landings. Mr. Gaskell-Blackburn started rolling practice on his Blackburn biplane. Lieut. Grey of No. 5 Squadron came over from Farnborough on a 50 h.p. Avro biplane. In the afternoon, Mr. Waterfall was again out on the Martinsyde monoplane, and Mr. Barnwell on the Vickers gun-carrying biplane. The Bristol and Vickers pupils were at work. Mr. Manton was out on one of Mr. Hucks' Blériot monoplanes.

On Thursday, the Vickers and Bristol Schools were busy. Mr.

Waterfall was on the Martinsyde monoplane, and Mr. Manton had three quarters of an hour's flight on Mr. Hucks' Blériot monoplane. In the afternoon, Lieut. Collett, R.N., made a couple of flights on D.F.W. biplane No. 2, whilst Herr Roempler was out several times on D.F.W. biplane No. 1. Mr. Manton was out again on Mr. Hucks' Blériot monoplane. The Vickers and Bristol Schools were busy.

On Thursday, Mr. Elsdon made a flight on the Vickers Blériot monoplane, after which Mr. Hinshelwood went up on the same machine.



Sub-Lieut. J. C. Spencer Warwick, R.N.V.R., who secured his brevet on a biplane last week at the Vickers Flying School, Brooklands.

Both Bristol and Vickers Schools were at work on Friday morning. Mr. Waterfall (with Mr. Guy Blatherwick as a passenger) made a long flight in the Martinsyde monoplane. In the afternoon Lieut. Collett, R.N., and Herr Roempler made several flights respectively on Nos. 2 and 1 D.F.W. biplanes, afterwards going over to Farnborough. The Vickers and Bristol pupils were at work. On returning from Farnborough, Lieut. Collett came down at Mayford to make a slight adjustment. Mr. Jack Alcock was flying Mr. Coatalen's Maurice Farman (Sunbeam-engined) biplane.

On Saturday the new Vickers gun-carrier was out, and Mr. Merriam was busy with his pupils at the Bristol School. Lieut. Collett, R.N., was flying No. 2 D.F.W. biplane both morning and afternoon. Mr. Barnwell was again on the Vickers gun-carrying biplane. Mr. Waterfall on the Martinsyde monoplane, Mr. Alcock on the Maurice Farman biplane, and Mr. Raynham on the 100 h.p. A.B.C.-engined Avro biplane. Mr. Merriam was also on the Bristol biplane.

The strong and gusty wind kept most of the machines inside the hangars on Sunday, only Mr. Barnwell on the new 100 h.p. Vickers gun-carrying biplane and Mr. Manton on Mr. Hucks' Blériot monoplane being out. The winner of the ballot for the free passenger flight was Mr. E. G. Mathews, of Brockley Combe, Oatlands Avenue, Weybridge.

**Bristol School.**—No tuition possible Monday, last week, owing to strong wind.

Tuesday, windy during morning, clearing in the afternoon, when Merriam made a test and then gave several tuition flights to Mr. Racine Jacques. Sergt. Deane also did some good solo flying.

Merriam out Wednesday, with Sergt. Deane, and later went up alone to test conditions but found too windy, reaching a height of 3,000 ft. when the wind kept the machine almost stationary over the ground. Late in the afternoon Merriam took Lieut. Smythies (new pupil) for his first trip.

Merriam gave a tuition flight to Lieut. Smythies, Thursday, pupil having control at times, after which Lieut. Smythies took charge of the machine, with Merriam in the passenger's seat. Sergt. Deane made several solo flights, and Mr. Racine Jacques piloted the machine with Merriam as passenger. Merriam finished up the morning's work by making a long cross-country flight. In the afternoon Merriam made a test with Lieut. Smythies as passenger. Sergt. Deane and Mr. Racine Jacques were out flying several solo

circuits and landing *en vol plané*. Lieut. Smythies had several tuition flights.

Friday, Merriam testing with Lieut. Smythies as passenger, and then sitting behind this pupil on circuits and landings. Sergt. Deane solo flying on circuits and banked turns, and Mr. Racine Jacques went up as passenger for tuition. The strong wind prevented further tuition, and instruction was given to pupils in the hangars.

Saturday morning, Merriam testing early after the rain with Lieut. Smythies as passenger, afterwards behind pupil on straights, giving him 25 minutes tuition. No other pupils turned up. Afternoon, Merriam up with Lieut. Britten and later with Mr. Racine Jacques and found very gusty.

**Vickers School.**—Monday, last week, Knight and Elsdon on biplanes with Comte Fitz James, Capt. Phillips, and Lieuts. Leighton and Underhill.

Thursday, Knight and Elsdon on biplanes with Lieut. Underhill and Comte Fitz James. The last named and Mr. Wilberforce solos. In evening Messrs. Hurst and Wilberforce solos. Lieut. Leighton and Comte Fitz James solos. Knight and Elsdon with Lieuts. Acland, Underhill and Leighton. Mr. Hinshelwood solo circuits on Blériot mono.

In morning, Friday, Knight and Elsdon on biplanes with Lieuts. Acland and Underhill. Comte Fitz James, Mr. Wilberforce, Mr. Hurst, and Lieut. Acland solos. Knight with Capt. Phillips. In evening Barnwell and Knight on biplanes with Lieuts. Underhill and Leighton. Comte Fitz James, Lieut. Leighton and Mr. Wilberforce solos.

**Sunbeam Activity.**—J. Alcock, piloting the Maurice Farman biplane fitted with 100-h.p. Sunbeam engine, on Thursday in the evening was out at Brooklands with Mr. L. Bailey to 2,000 ft. for exhibition flight. On Friday he made several cross-country flights at high altitudes during the day, and on Saturday a fine cross-country flight with Miss C. Pullin, besides an hour's cross-country trip with Mr. Hipwell.

**London Aerodrome, Collindale Avenue, Hendon.**

**Grahame-White School.**—Tuesday, last week, Mr. Smiles and Prince Sapieha straights with Instructors Howarth and Strange in passenger seat.



Lieut. Victor Lindopp, who secured his ticket at the Grahame-White School last week.

Messrs. Kershaw, Parker, Robinson, solo straights, Wednesday. Messrs. Weber and Stewart straights on Blériot. Messrs. Smiles, Lowe, North, Robinson and Prince Sapieha straights with Instructors Strange, Howarth, Birchenough and Lillywhite in passenger seat. Mr. Dunne, solo circuits.

Thursday, Mr. Weber straights in Blériot. Messrs. Lowe, Smiles, Moore, Robinson, North, Major Piercy and Prince Sapieha straights



with Instructors Strange, Howarth, Lillywhite and Birchenough in passenger seat. Mr. Parker and Prince Sapieha solo straights. Mr. Kershaw solo straights and circuits.

Mr. Dunne straights on Blériot on Friday. Messrs. Smiles, Moore, Robinson, North straights with Instructors Howarth and Lillywhite. Major Piercy, Mr. Parker and Mr. Kershaw solo straights and circuits. Prince Sapieha and Mr. North solo straights.

Saturday, Messrs. Smiles, Lowe, Moore and Major Piercy straights with Instructors Lillywhite, Howarth and Birchenough in passenger seat. Prince Sapieha and Mr. Kershaw solo straights.

**Beatty School.**—Things were rather quiet at the Beatty Flying School during last week owing to one of the cylinders of the Gyro motor giving out. This engine will shortly be replaced by a 50 h.p. Gnome.

On Thursday the Moorhouse-Blériot was out piloted by Marty, and on Friday and Saturday mornings Bjorkland was on this machine practising straights and seemed to be handling it very well.

The school will have their second Wright (40 h.p. Wright motor) ready early in the week, and the small single-seater Wright by the end of the week. The latter machine will be fitted with an 85 h.p. single-valve Gyro.

**W. H. Ewen School.**—On Wednesday, last week, the school was out at 6.45 a.m. After test flight by Mr. F. W. Goodden on *brevet* machine, Mr. Bankes-Price did circuits and figures of eight, and Mr. Curtis half-circuits.

At 6.50 a.m. on Thursday, Mr. Goodden test flight on *brevet* machine, after which Mr. Bankes-Price went through the first half of his *brevet* tests in good style. Lieut. Kinnear circuits on same machine. On 35 h.p. Caudron No. 1 Mr. Carruthers straights, and Mr. Verney rolling.

School out at 6.30 a.m., Friday. Mr. Bankes-Price went through the second half of his *brevet* tests in excellent style, flying very steadily, and landing well. Lieut. Kinnear circuits on same machine. On 35 h.p. Caudron No. 1 Mr. Carruthers doing straights, and Mr. Verney rolling and hops. At 3.30 p.m. Mr. F. W. Goodden out on 60 h.p. Caudron. He took eight passengers up, rising to 2,000 ft. each time.

On Saturday the pupils were out at 6.30 a.m. Mr. Warren made a test flight on the 35 h.p. Caudron No. 1, after which Mr. Carruthers did straights and Mr. Verney rolling and straights.



Mr. Jack Graham, who passed for his Royal Aero Club certificate at the Grahame-White School, Hendon, last week.

During the afternoon Mr. Goodden gave exhibition and passenger flights on the 60 h.p. Caudron.

**Hall School.**—The weather during the early part of last week was very unpropitious for flying, but during the latter part G. L. Hall was out repeatedly on the Avro taking all the pupils for passenger trips at 2,000 ft. On Friday the new Penguin rolling

machine was put through its trials and proved a very satisfactory machine. On Saturday G. L. Hall took Miss D'Elsa for cross-country flight round Harrow and Neasden at 2,500 ft. C. G. C. Allen was out many times during the week on his Blériot, and on Friday G. L. Hall flew several circuits on machine testing the warp.

#### Salisbury Plain.

**Bristol School.**—Tuition impossible on account of wind, Monday, last week.

Windy during morning, Tuesday. In the afternoon Jullerot gave passenger tuition to Lieut. George, Lieut. Bonham-Carter, Lieut.



LOOPING SPREADS AT HENDON.—Chas. Weber, a pilot from Hungary, and now one of the "G.W. Colony," loops the loop, assisted by Mr. Warren.

Myburgh, Capt. Walcot, Mr. Hay and Lieut. Rabagliati. Solo flights were made by Lieut. Harman, Air-Mechanic Locker, Lieut. George and Lieut. Bolitho.

Wednesday, Jullerot made a test in tractor biplane, and then took Lieuts. Rabagliati, George and Myburgh for trips on this machine. Voigt and Stutt gave tuition to Mr. Hay (3 flights), Mr. Parker (3), Lieut. Rabagliati (2), Lieut. Bonham-Carter and Lieut. Myburgh. Capt. Walcot, Lieut. Myburgh and Lieut. Bonham-Carter then made their first solo flights. Lieut. George and Lieut. Harman each flew two solos and Lieut. Bolitho one.

Passenger tuition was given by Jullerot and Stutt, Thursday, to Mr. Chambers (6 flights), Mr. Parker (6), Mr. Hay (6), Lieut. Bolitho (3), Lieut. Rabagliati (3), Lieut. Bonham-Carter (2), Lieut. Myburgh (1), Lieut. George (3), Lieut. Harman (1), and Captain Walcot (2). Solo flights were made by Lieut. George (7), Lieut. Bolitho (3), Lieut. Rabagliati (5), Lieut. Harman (5), Lieut. Myburgh (4), Lieut. Bonham-Carter (4) and Captain Walcot (1).

Friday, Jullerot testing, then giving tuition to Mr. Parker and Mr. Hay, then taking the former pupil on the tractor biplane. Voigt gave tuition to Capt. Walcot, Mr. Hay and Mr. Chambers. Solos were made by Lieuts. Bolitho, Bonham-Carter and Harman. Lieut. George then flew for his certificate at a height of over 600 ft., doing the tests splendidly.

#### Shoreham Aerodrome.

**Pashley School.**—Tuesday, Wednesday, Thursday and Friday last week, C. L. Pashley instructor for week. Up with pilot: Hale, Willett, Gray, Nichole and Mortimer. Straights: Hale and Gray. Circuits: Hale, excellent circuits, height from 50 to 300 ft., landing right by the sheds. Mr. C. L. Pashley took advantage of the improved conditions on Wednesday to indulge in some excellent trick flying. Several spiral descents from 3,000 ft.

On Easter Saturday Pashley Brothers are to race against a motor car and cycle on Bognor sands. An out-and-home course of 1½ miles. Afterward exhibition and passenger flights.

# **ARMCHAIR REFLECTIONS.**

By THE DREAMER.

## **Aviation as a Career.**

It is Wednesday, April the first, and I am writing these reflections nearly a week before they will be wanted to provide employment for the gentleman of the white apron, who so dexterously picks out small types from little boxes into which I could never find room to place finger and thumb.

There must be some reason for this burst of energy, but I may as well disown right away that the date has anything to do with it. The fact of the matter is, that this dreary old world, represented at the moment, so far as I personally am concerned, by a very fine view of the printing works, is bathed in brilliant sunshine. As I sit at my desk, I can see through the windows opposite many of those white-aproned gentlemen, one of whom is, no doubt, busy setting up all that interesting and valuable information about the legal aspect of loitering on roads which a cold, wet day caused me to write over a week ago.

To-day I could not write of law. To-day I have no thought for long, cold corridors round and about courts of justice. To-day I can easily put from me thoughts of ushers in black shoulder-capes who cry for "Silence" at inopportune moments, when nobody but counsel is speaking. To-day I hear not the hum of subdued voices as Leader and Junior talk matters over together, to the embarrassment of counsel on his feet.

Through my open window comes to me the buzz and rumble of giant machinery, which tells me that our sister-journal of the "Yellow Cover," born one day earlier each week than her twin sister FLIGHT, is in the press and spreading her inky information over miles of pure, white paper, preparatory to starting on her journey to the four quarters of the world early to-morrow morning. To me, this buzz is not of machinery but of bees. It is warm and pleasant to-day, and it requires no effort to locate that buzz in the far corner of the orchard, under the apple trees. If I close my eyes for a moment, the breeze, entering by the window and playing with my hair, is the breeze from off the sea. I am at full length on the top of the cliff, cap pulled over eyes, and pipe in mouth, and I dream what reflections I would dream did modern journalism and a benevolent editor but permit of my working (save the word) under conditions of my own choosing.

King Sol is responsible for making this a day on which I want to do things, the more so that I know that in all probability to-morrow will be but a repetition of the wet, cold, miserable days of the past few weeks. On a fine sunny day I feel a quiet joy—at peace with all the world. Should the man I saw last week happen along now, he could touch me for the value of a whole week's luncheons, but should he read this I warn him that to-morrow may be wet, and I shall be in a different mood.

There are days when I write this page because I am paid to do it; days when I would rather do anything than write; but to-day, because the sun is shining, I can, in my exuberance, enter with equanimity upon any task usual to the journalist. It is for that reason that I have saved by me, awaiting the first summer day, a newspaper cutting, which I realised I could not deal with until I was brought to the proper frame of mind under the genial influence of the sun.

On this day, then, I am prepared to see eye-to-eye with the writer of the cutting in question, but will admit that I am more than suspicious, that on a cold, wet day, I might not be prepared to go quite so far along the line of enthusiasm in his estimable company.

The paper in question is, at the moment, running an Information Bureau—a kind of answers to questions—in which they give, no doubt, the best advice they can on a variety of subjects. Here is something asked by a correspondent: "What are the prospects of aviation as a career? How can I learn aviation?—Ambitious (West Kensington)."

In reply, they give, as a first paragraph, the verdict of Mr. Richard Gates, of the London Aerodrome: "The prospects which I see opening up in the next few years are in every way excellent. But in aviation there is no room for the man who is merely fascinated by the glamour of the career. The man of intelligence and hard work can always get on." With this I am in perfect accord, and had it ended with the words of an expert, I should not have had to wait for a sunny day. "If a man is a good pilot he can always obtain engagements. His pay will vary with his ability, and with the terms under which he is paid. Mileage, records, and passengers carried are all items which help to swell the pilot's fee. One pilot at Hendon earned about £1,500 last year; £500 and £600 is almost the minimum for a good man." In agreeing that one pilot at Hendon may have earned the amount mentioned, I will, seeing that it is a sunny day, try to believe the latter statement also. I realise that the statement is qualified by the word "good," but the definition of what constitutes a good pilot should not be so very hard to arrive at. I have, of course, no data to go upon as to the earnings of the many pilots of my acquaintance, but I happen to be sufficiently in the confidence of several whom I should certainly class as good to know that they would be very pleased indeed to accept office with any firm of standing who would be willing to pay them a salary equal to the amount mentioned. Pilots are undoubtedly men of the large-hearted variety, and the risks they take in the execution of their duty are out of all proportion to the pay received. There is, of course, a great fascination in flying, and in addition it is a healthy life, tending to make a man robust and light-hearted; but I am afraid some of the employers have a tendency to look on it as a healthful recreation, into which men are pleased to come, and to underrate their worth as accessories to their business. After all, aviation is a business, so far as flying, apart from Government flying, is concerned, and when a man is sufficiently master of his art that he can be trusted to take valuable machines and lives up into the air, every day, year in and year out, in any kind of weather; when, in fact, he has become a complete master of the art of airmanship, he is a valuable asset to his employers, and should receive remuneration comparable with the position he occupies; and this being a sunny day it pleases me to think that he does so.

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## **Aeronautics at Yale.**

In connection with the Sheffield Scientific School at Yale University, it is proposed to establish a course in aeronautical engineering, under the direction of Prof. Breckenridge, which may be taken by the mechanical engineering students.





A snap from the tea pavilion during the past season at Hendon, where fashion and motors do congregate.

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## THREE YEARS' EXPERIENCE OF FLYING.\*

By B. C. HUCKS.

THE primary object of the paper which I had the honour to be asked to read to you this evening, is not to be a mere recital of my experiences during the three years I have been actively piloting an aeroplane, although it has the title "Three Years' Flying Experience"; but I hope to be able to give to you a few points which should be of general interest, and perhaps beneficial to fellow-pilots, and to others who have so kindly come here to-night to hear this paper.

I will first give you a few instances of my earliest failures, their causes and remedies. Most of my troubles, when I look back, may be placed under the simple headings of inexperience and want of confidence, which, I suppose, are very nearly one and the same thing. The machines of three years ago, it is true, were not so efficient, nor so safe, but that fact has really, in my opinion, no more than quite a small bearing on the results of those days.

I will give you two instances of failure that happened to me soon after getting my *brevet*, purely through want of confidence, which I think I can safely say with my present experience, would not occur again, even supposing I were piloting the same machine, under identical conditions. The first instance occurred in attempting a cross-country flight from Filey to Leeds, on a 50 h.p. Gnome-Blackburn. All went well for a distance of 18 miles, when suddenly one cylinder ceased firing, a state of affairs which, to-day, would not be very disconcerting, but then, purely through want of confidence, or due to inexperience, I was seized with—shall I say, "cold feet"! I had visions of the machine dropping like a stone, if I dared to try to fly it another yard, so all that was left was to make a wild plunge into the very nearest field; never mind if it was suitable or not as a landing ground—get down somehow, as long as you get to earth. Those were really my feelings in those days, and, I may add, those of most pilots, and the result was, that the field being unsuitable (full of cattle) and rather small, I *vol piqué* to make the best of it, and smashed the machine to pieces! Now, exactly the same thing happened to me a little later on, under practically similar conditions. It is very likely a good number of you present to-night will remember the start on the Monday morning from Hendon, for the circuit of Britain in 1910. What a perfect flying morning! I was flying the same machine that had been smashed up in Yorkshire, and exactly the same trouble overcame the engine after 35 miles; one cylinder began to misfire; the same terror seized me, and I chose the nearest field, likewise wholly unsuitable, having a practically invisible barbed wire fence across the middle. It was not that I made a bad landing, although the machine was wrecked—the field was hopelessly impossible, and the irony of it all was that less than 400 yards away was a veritable aerodrome waiting for me to land in, had I only had the confidence to try to fly the machine on the 6 cylinders which were still firing. The reason I want to bring these two instances to your notice is that you will see what a simple thing it took in the earlier days to bring about disaster.

As I have said before, I would willingly risk flying the same machine to-day, under the same conditions, and there is very little doubt that I should succeed in keeping it in the air, even with its loss of power, until I had found a suitable landing-place. I daresay there are numbers flying to-day who could relate instances of where, had they but known then what they know now, things would have turned out very differently.

I consider that the present-day high standard of flying is due far more to the improvement in piloting than to the improvement in machines. One has only to be at Hendon, any very bad windy Saturday or Sunday, to see that. It's true that most of the machines there are of the later types, but then see the wonderful way the old Farman-type biplanes are flown. I consider those machines are only slight improvements on the machines of three years ago, and yet they are put through evolutions which, at that time, were not even dreamed of. I can take a good example of the way improvement in piloting has out-distanced improvement in machines—in the case of myself, my "looping" Blériot. Most of you know that there is very little difference between that machine and the 50 h.p. Blériot of three years ago. The difference at any rate is so slight that any 50 h.p. Blériot of that period could have been altered in a very short time so as to make it safe to be flown much in the same way that my "looper" is flown. I can remember Mr. Grahame-White, at the Boston meeting in U.S.A. in the autumn of 1910. He had, as far as I know, the first 50 h.p. Blériot that ever went into America. I can imagine myself with my present knowledge and experience, just altering his machine slightly, and starting off on a flight at that meeting, and causing some slight sensation by turning the monoplane upside down, and putting in a few loops—and it could easily have been done. All that was wanted in those days was just the confidence and knowledge that the experienced pilot of to-day possesses.

\* Paper read before the Aeronautical Society, Wednesday, April 1st.

I have been telling you what a really valuable asset confidence is to a pilot, and how essential; but there's such a thing as too much confidence. I remember an incident which was probably one of the narrowest escapes I've ever had through over-confidence. I was acting as chief pilot for the Grahame-White Aviation Company at Hendon, and had confined most of my flying to monoplanes (Blériots), when it occurred to me that it would be useful if I likewise mastered the biplane; and accordingly I very comfortably started off on an old "school" Henry Farman type machine, and I found things quite all right. The machine seemed just a little strange, rather more cumbersome and slower to act than the machine I had been used to, but I felt thoroughly at home; in fact rather too much so, for after about two or three circuits, I decided to try a few "stunts," the first in the form of a *vol plané* from about 300 ft. Now, firstly, before proceeding with the relation of this incident it is necessary to explain certain characteristics of the two machines in question. The monoplane being a tractor machine, the propeller slip-stream gave slightly extra support to the main planes, the result being, when the engine was switched off, that this slight extra support was withdrawn, and the machine assumed a more or less natural diving angle, without requiring first to have its nose put down. In the case of the biplane, the machine, being of the pusher type (*i.e.* with the propeller behind the main planes), derives no lift on the main planes through the propeller slip-stream, but the reverse happens—the tail planes alone receive an extra lift through the propeller-draught, and, when the engine is stopped, this extra lift promptly disappears from the tail, so that the tail drops, and the machine tends to assume a climbing position as soon as the power is cut off. This is what happened in my case; instead of putting the nose of the biplane down into a gliding position, I switched off, expecting much the same to happen as with the monoplane—*i.e.*, that it would naturally take its own gliding angle. But, as I stated before, I was over confident, for the tail dropped on switching off, and the machine tended to climb in spite of the fact that I had the elevator pointed hard over for descent. The engine refused to pick up again, owing to over rich mixture, the machine came to a standstill in the air, then commenced one huge side-slip to within, as eye-witnesses state, 25 ft. of the ground, when it pulled itself up, starting another side-slip in the other direction, like the swing of a pendulum, eventually landing sideways on a side-slip, but fortunately sufficiently flat merely to carry away the whole of the landing chassis. There is not the slightest doubt that sheer luck and no judgment saved me. I consider that the natural tendency possessed by most tractor machines to assume a nose-diving position, if left to get out of awkward positions, is an enormous advantage over the pusher-type machine, which I fear does not possess that ready tendency. I have mentioned this instance to illustrate the dangers of over-confidence.

I will next deal with the subject of flying in bad weather. I think all pilots here to-night will agree with me that the worst enemy to flying is not wind or rain, but fog. I know which I would rather fly in. I think perhaps I might illustrate an instance of the extreme unpleasantness—not to say danger—of suddenly running into fog or mist. In May, 1912, I was testing out, at Issy-les-Moulineaux, near Paris, a 70 h.p. tandem Blériot, giving several of my friends joy rides from the Issy ground, round the top story of the Eiffel Tower and back. I think I had my third passenger with me, and was just about to make the turn round the top of the tower, when the machine was suddenly enveloped in a low-lying cloud scudding across the sky. I could see nothing—barely my wing tips—and, knowing my close proximity to the tower, such a thing as colliding with it was not an impossibility. However, by swinging the machine at right angles to its direction by the compass when I eventually came out of the cloud, I had several hundred yards to spare from trouble.

A bad fog makes cross-country flying very dangerous and almost impossible. Many narrow escapes are on record of pilots flying over steadily rising ground and assuming by their barographs that they were at a safe height, but only to find that, on suddenly coming out of the fog, they were literally skimming tree tops. The only redeeming feature—if one can call it so—is that high winds and fog do not go together. Rain is distinctly unpleasant, and blurs the landscape. Heavy rain becomes, at times, almost unbearable, owing to the force with which it is driven against the face, principally by the speed of the machine, and also by the propeller slip-stream. To give one an idea of what high speed in very heavy rain will do, the following instance will suffice. Mr. Sydney Pickles was flying my 70 h.p. Blériot from Coventry to Birmingham last year. On the journey he encountered a heavy rain-storm. On landing, he complained of the pain he had suffered, and upon examination of the propeller it was found that the leading edge of the blades had the appearance of having been gnawed by rats, such was the force



of the propeller meeting the rain. I remember seeing Mr. Grahame-White make quite a lengthy flight at Boston, U.S.A., in a fairly heavy rain. His face was much swollen on landing owing to the effect of the rain bruising his face. I myself had quite an unpleasant experience in only a fine drizzle—sometimes called a "Scotch mist." I was persuaded to try a new type of goggles, made of a non-inflammable celluloid, but these had the disadvantage (which I had to find out in practice) of badly steaming up and practically obscuring the view entirely, in a fine rain—in fact there was nothing left but to remove the goggles altogether, the result being that the whole force of the rain, fine as it was, came into the unprotected eyes. The pain was so intense, although it probably only lasted half a minute (time in which to effect a landing), that I suffered with very bad inflammation of the eyes for two days afterwards. I do not think rain affects the flying capacity of the machine to any great extent. Continued rain would, I believe, show its effects on the propeller first of all by being driven into the joints, causing the parting of the laminations.

In the case of trouble owing to wind, the velocity of the wind can practically be neglected, excepting that a very strong head-wind makes a cross-country journey a bit longer than it might be. When I say that the velocity of the wind can be neglected, I mean that the nature of the wind is of far more consequence to the pilot of to-day than its speed. I have flown whilst at Southport in 1912 in a wind which I believe I am perfectly safe in estimating at 45-50 miles per hour, because of the little headway the 65 m.p.h. machine made against it, and yet the wind gave no more trouble than a flat calm, because, provided one landed into it, the machine did not run a length and a half; it made landing easier, the machine climbed quicker, and the air seemed more buoyant. The wind in this instance was blowing directly from across the Irish Channel. During my earlier experiments in flying at Filey, on the Yorkshire coast, I invariably found that the wind, no matter what its velocity when blowing off the sea, was perfectly steady, and gave no trouble whatever to the pilot. I think that perhaps one of the most noteworthy examples of the strange behaviour of winds was the start from Brooklands of the first *Daily Mail* Circuit of Britain. The day was a sweltering hot one, with not a breath of wind, and yet I suppose it surprised most of the pilots, and not a few found it too bad altogether. I myself, then quite inexperienced in flying in bad winds, after a start found the conditions so bad that I deemed it wiser to return and wait till conditions improved. The cause of such unexpected conditions was due, I think, to the intense heat, which made the atmosphere literally boil, causing eddies, upward and downward currents, and general disturbances of the air.

There are several outside causes which affect the nature of the wind. One of the chief is the contour of the surrounding country. I mentioned previously how, when the wind blew from across any large expanse of water, it was invariably steady and gave little trouble to the pilot. I have found that when the wind is blowing from across hilly, undulating country, it is a more difficult wind to deal with, owing to the manner in which the currents are broken up and deflected.

In the summer of 1912, I was flying at Strathpeffer in the north of Scotland. My flying ground was at the foot of Ben Wyvis, a mountain 3,500 ft. high—in fact, the whole surrounding country was mountainous. On this day in question there was very little wind (ten or fifteen miles per hour), but I found the way in which the currents were broken up by the mountains was most marked. One usually finds that after reaching a considerable altitude—say 3,000 to 4,000 ft.—the wind gets steadier, no matter how gusty it may have been near the ground. I remember that during one flight at Strathpeffer I reached a height of 5,800 ft., and even at this height one found the unsteadiness of the wind most marked, an effect due in all probability to the proximity of the mountains.

I certainly shall never forget the view I had on that day. From a height of 5,000 ft., I suppose I could see some thirty miles away. On one side was the sea—the Moray Firth—on the other, as far as the eyes could reach, were mountains standing up like saw teeth, with large glistening lakes here and there. The prospects of an enforced landing in such a place were certainly not over pleasant, and it was not surprising that after the wind had traversed such country, it became a bit troublesome to airmen.

There is another instance in my memory which seems to show that the wind is affected by causes other than contour of the land. In the spring of 1912, whilst flying at Weymouth, I found that whenever the machine seemed to pass from the land to the sea, it received a somewhat severe shock, just at the moment of passing from the land to the water. This would happen from a height of about 500 ft. At first I took it to be a coincidence, of just a gust striking us at that moment, but it seemed to happen so repeatedly that I believe the change from the land to over the sea was the cause of it. I cannot assign any definite reason for this, as there were no cliffs, and the land ran down gradually to the sea. As it was quite a warm sunny

day, the sudden change of temperature from land to sea probably set up vertical currents.

I have so often been asked the question whether I ever come across air-pockets when flying, and what happens when I do. Personally, I think the term "air-pocket" is a misnomer, as most people are thereby led to believe that such a state of affairs exists in the atmosphere as a partial or semi-vacuum, which, as it were, goes floating about, dealing out destruction to the unwary airman. I really believe that there are quite a lot of people who have not troubled to think out the matter, and actually think that, owing to this partial vacuum, the aeroplane suddenly drops, as its support has gone. The so-called "air-pocket" is, in my opinion, merely a quick downward current. A machine will at times seem to drop as if its support were suddenly withdrawn, behaving much in the manner one would expect it to, if it were possible for it suddenly to come upon a partial vacuum in the atmosphere. But I believe the machine will do, and readily does, exactly the same thing in the other direction, *i.e.*, it gets suddenly caught in an upward current and gets shot up rapidly, the only difference being that the downward current is more noticeable, because the human system is more sensitive to sudden descents than to ascents. I think most of you will agree that, when travelling in the vertical plane in a fast elevator, or lift, one feels the rapid descent far more than the ascent, although the speeds in either direction may be the same. Thence, the pilot will notice his machine drop more readily than he feels it suddenly ascend. The term "air-pocket" is therefore, undoubtedly, a misnomer.

*The Efficiency of Pilots.*—There is one point which I should like to bring forward here, *i.e.*, the case of a pilot who undertakes the flying of all and sundry types of machines. Whilst it's a very valuable accomplishment, I can't help thinking of the old saying, "Jack of all trades—master of none." I do not suggest that an airman who pilots equally well some dozen different types of aircraft is not master of one of them, but I do think that for the utmost efficiency a pilot should specialize on one particular make of machine. I suppose that for "Service" work it is most essential that pilots should be able to fly any machine which they may be called upon to pilot in an emergency.

But every type of aeroplane has its peculiarities, and it is quite conceivable that a pilot may get confused with these differences. On the other hand, in my opinion, if a universal standard control were adopted, it would tend to reduce this trouble. One can imagine the confusion there would be, supposing a certain make of motor car were steered by the feet, and one were suddenly called upon to drive another make that is steered by the standard wheel steering. I mention this as analogous to the difference in the controls of some makes of aeroplanes. After a pilot has gained a little experience, he does all the controlling of his machine absolutely *instinctively*. He never has to think what to do; the whole operation comes to him as naturally as walking. When walking the deck of a ship which is rolling and pitching badly, it is not necessary to have to think out your movements in order to effect a safe crossing of the deck. Everything is done by mechanical instinct, exactly in the same way that a pilot will fly his machine on a rough windy day. It is easy, therefore, to see how confusing a machine would be to a pilot who is not used to that particular type of control.

*Efficiency of Machines.*—High speed has been sought after by designers in many cases, at the sacrifice of other desirable qualities in a monoplane. I think that a machine which has merely very high speed as its feature is of very little practical use. An aeroplane should, I consider, be judged from the standpoint of all-round efficiency. An aeroplane that will fly at 100 miles per hour, but required about 400 yards to land in, would be too dangerous a proposition for practical use, as one would have little chance in the event of engine failure of effecting a safe landing on a cross-country flight.

Equally dangerous would be a machine that would not glide sufficiently well with the power cut off. For instance, there are some types which, owing to rather more head resistance of, say, the landing chassis, have a slightly reduced speed. Well, suppose that that landing chassis, with its extra head resistance, is capable of withstanding far greater shocks than the chassis that gives a minimum head resistance, surely it is worth while sacrificing, say, three or four miles per hour, if by so doing you can land ninety-nine times out of a hundred without trouble, as against, say, nine times out of ten with your faster machine.

I mention these points, as so many people are apt to judge the qualities of an aircraft entirely by its speed, and not so much, as should be, by all-round efficiency.

*Looping.*—I now come to the last part of my paper, which is concerned with "looping-the-loop" and upside-down flying. My advice to any pilot who contemplates these experiments—and they are well worth considering, as I will show later—is, primarily, "be certain that the machine which you intend to pilot through these

extraordinary evolutions is suitable for the work." There should be no question as to its strength. The bracing of the wings, especially if it be a monoplane, should be such that it will stand as big a strain on the top side as on the underside of the wings. The range of control should be greater than is necessary for ordinary flying, so that the machine will have no hesitation in responding to the sudden calls on the control. The machine must be so balanced that it will assume a nose dive if the controls are abandoned at any considerable height.

The whole secret of the safety of this freak flying lies in the fact of allowing sufficient altitude in which to recover from any precarious position the machine may assume. I have found out that there is no position that the machine can be put into from which it cannot easily be brought back to the normal again, provided, as I say, that there is sufficient altitude allowed in which to effect the recovery. This one point alone, when clearly grasped, adds enormously to that most valuable of qualities which a pilot can possess, confidence.

There is nothing extraordinary required in the piloting of the machine. I find it does practically everything you set it to do in the way of tumbling about in the air. One golden rule which I had thoroughly drilled into me by M. Louis Blériot, when practising for the looping at Buc, was to use the controls "doucement," i.e., gently, as one can easily see that a sudden jerk on, say, the elevator, would throw an enormous strain on the fuselage, whereas if that movement were made "doucement," the strain would be negligible. Much the same thing applies to the driving of a motor car—one driver can steer a car fast round a corner by handling his steering with a sensitive touch, whilst another with harsh hands will cause the car to skid, at exactly the same speed, which shows how a much greater strain is thrown on the machine merely by the touch on the control.

The machine on which I have at present made several hundred loops has a far wider range of control than a standard machine. The wing warping is nearly four times as effective, and the tail elevator is considerably larger. The result is that the machine readily answers to the control. For instance, when doing a perpendicular nose dive, the machine responds immediately to the elevator and flattens out without the slightest hesitation, a point of the greatest importance. The same thing happens with the warping. The machine can be banked up so that the wings are perpendicular, by simply turning rather sharply, and warping at the same time.

The machine is fairly easily got into the inverted position, but it is very noticeable how unstable it is when in that position. It requires extreme care in balancing it, as it were, because the moment it is allowed to get only slightly out of the level, it will side-slip and turn the right way up. This, after all, is only what would be expected, as it shows its natural stability, and its tendency always to assume its normal position.

The machine cannot be made to climb when inverted, although the engine may be turning full speed. There is, in fact, very little support in the wings when the wrong way up. If one tries to keep even the same level, with engine full on, the machine will stall, and side-slip round to its normal position again.

The only way I find my machine can be kept in an inverted position for any period (my longest timed inverted flight so far is 2 minutes 5 seconds, and even that seems quite a long time to be hanging head downwards) is by allowing it to plane downwards the whole time. The control when hanging head downwards is not so confusing as might be expected, because the pilot still bears the same relative position to his machine. Needless to say, one has to be very securely strapped in for these evolutions, as otherwise one would certainly fall out. I find it a great advantage to be strapped very solidly and tightly to the seat. I have straps round the waist, thighs, and shoulders. It is true I feel much as if I were in a straight-jacket, but I consider that far better than if the straps were at all slack. When you are tightly strapped in, you feel absolutely solid with the machine, and a sudden bump or jerk does not dislodge you in the slightest. Most of you who are present have no doubt travelled some time or other in the back seat of a fairly fast car, and you must know how unpleasant it is when that car goes over a small bridge, or culvert, on a country road, and you leave the seat and shoot up about a foot. Well, there are times when an aeroplane treats one much in the same way, and you will then see the advantage of being really tightly and rigidly strapped to your machine. Of course, there is a serious disadvantage to being strapped in rigidly to the machine, and that is the difficulty of getting out quickly in the event of even a minor mishap. What is wanted is some certain quick-release device, which cannot by any chance come undone until required. I consider that then strapping in, and rigidly strapping in, would be adopted generally.

I now come to the question of the value of this freak flying. There is not the slightest doubt that every pilot who has looped the loop, or flown upside down, has benefited considerably by so doing. His confidence has increased enormously, and even those pilots who have only seen others do it must benefit. Surely it is nice to know that a machine can be wantonly turned over and righted

again. I can remember, not so very long ago, before the looping era, that a very bad gust of wind struck my machine, which sent the planes up vertically. I thought something very serious was going to happen, but the machine recovered somewhat quicker than I did myself. There is no doubt that the same thing occurring to-day would not be nearly so disconcerting, because one knows that it is possible to recover (if there is altitude enough) from any conceivable position the machine may be thrown into.

Then again, it will bring about a general strengthening of machines, because a machine which has successfully looped a number of times has surely proved itself strong enough to withstand the strains of ordinary flying.

It is true that one does not fly the wrong way up, because there is any advantage in so doing. The critics have said that most men are quite satisfied in being able to fly the right way up. But the same thing applies to most things. One might as justly say "What purpose is served by driving a motor car at the rate of two miles a minute on Brooklands track? most men are content if they can drive their cars at half that speed." But, in each case, they are extreme tests, which record the progress of science.

Mr. Gordon Bell, in the course of an extemporaneous address, which was freely interspersed with criticisms, remarked that his earliest experiences were obtained in 1910 on the Roe triplane, and were succeeded by others on the Hanriot and the R.E.P. On one occasion while flying the last mentioned machine, he found that the back wire of one of the wings had broken. As may be expected, he was extremely anxious to regain *terra firma*, and after a deal of cogitation, he decided, in so doing, to come down with the defective wing on the inside of the turn—he hoped that that was the correct procedure. He had often noticed on sundry occasions when flying or approaching certain clouds that the compass exhibited a tendency to dance a tango. Mr. Bell said he had been struck by the deficiency of fin area at the rear of some machines and proceeded to show, by the aid of sketches upon the blackboard, how essential it was to have enough surface, not only to the rear, but also above the C.G., remarking that certain machines appeared to him to be quite unsafe. He would like to know whether this was so, or not.

He also referred to the fitting of airbrakes on various machines and observed that such devices should conform to three requirements, which he enunciated as follows—they should (a) not tend to produce any upsetting effect upon the machine; (b) not mask the controls in any way, and (c) should be readily capable of being put on and taken off, if desired. He had noted that some constructors gave the maximum speed of their machines as, say, 95 miles per hour, and perhaps they would be capable of reaching 100 or even 110 miles per hour. But the lower range of speed was sometimes quoted as low as 35 miles per hour and although it might be correctly given, it appeared to him that the fields often required "a lot of chasing." What would be the eventual solution of this problem he could not say, but the proposal of M. Blériot to split the rudder vertically might prove satisfactory.

Mr. Leonard Bairstow said he had been much interested in remarks of the two lecturers, and with regard to the questions that had been propounded, they could be and are the subject of calculation. If the tail fin and rudder areas were made too large, the machines became more dangerous. The machine might sideslip inwards if it had too small a dihedral and too large a rudder, whilst, if the dihedral was made too great and the rudder too small, there would be a loss of control by the rapid oscillation of the machine and it would eventually turn tail foremost.

Mr. Mervyn O'Gorman said that he was inclined to wonder whether Mr. Hucks ascribed too large a share in the credit for the recent progress made by pilots to the increase in confidence, as his increase of skill, which includes so many attributes, makes more for safety than the growth of confidence. In the spirit of enquiry, he would like to know whether Mr. Hucks could elaborate the point that his remarks appeared to convey rather than to state, that flying into a head wind assists the climbing speed, as he knew of no reason why this should be so, and possibly it was an illusion on the part of the pilot, owing to the slower progress over the earth. Isolated instances would be of no value, as in one case, which he cited, a much faster climbing speed was attained when not flying against the wind, due evidently to the fact that the pilot was in the air up-cast such as is usually topped by a cumulus cloud. It was more true of the older types of biplanes than of the latest machines, that these did not when the engine was cut off adopt their gliding angle of descent. At any rate, the slip stream of the propeller over the tail need not and should not be such that when interrupted the aeroplane adopts the cabré attitude. Such a machine can be made, so that when gliding downwards if the engine be opened out, it will without any elevator movement (the elevator being supposed straight and kept so) first increase its speed and soon turn its nose up, and if the throttle be kept open, climb. He said as regards the effect of the proximity of mountains on the production of eddies, that at the



aerodrome at Vienna-Neustadt, which was quite flat and eight miles long and four miles wide, bordered along one side by high mountains, there was an entire absence of irregular eddies in the wind.

Mr. O'Gorman remarked upon the value of aneroïds to pilots as there was little else to assist him in determining his position. In regard to the specialising of the study of particular machines, it was a good point for service purposes that the combination of man and machine should be as efficient as possible and this was obtained by specialising. But for research and experimental purposes, which must cover all sorts of machines, there was always full scope for the versatile flyer. Mr. Bell's record of the effect of clouds upon the compass was astonishing, as any visible variation, by either electrostatic or electro-magnetic effect seems impossible, unless the aeroplane itself were discharging large quantities of electricity, which at the potential difference needed for disruptive discharges to a body of vapour means enormous sparks. What appeared more probable was that the aeroplane in question had a two-bladed air-screw, that the flyer was not aware of the fact that he was turning, that such turning with a two-bladed screw caused the well-known gyrostatic vibration, and that this vibration chanced to have such a period and direction that the needle was caused to make big deflections. It was very good hearing Mr. Bell draw attention to the value of fin distribution. For air purposes, the top fin had much to be said for it, as when properly proportioned with the other fins in the manner indicated by Mr. Bairstow recently, nothing but good could come from it in the air. But the problem of safe flight is nowadays the problem of safe landing in a wind. What is wanted is a righting moment in the air. The top fin gives a righting moment in the air, but also unfortunately introduces a serious side force with side winds which was most inconvenient when, by reason of the configuration of the ground, the aeroplane must be brought down across the wind. Experiments had been made at the R.S.F.,

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#### British Army Aeroplanes.

REPLYING to questions by Mr. Joynson-Hicks in the House of Commons last week, Mr. Harold Baker, Financial Secretary to the War Office, stated that sixteen B.E. aeroplanes had been built at the Royal Aircraft Factory, of which seven were issued as new machines, and the rest were reconstructions of other types.

Mr. Baker denied that in the testing of the new R.E. machines the elevator flaps of several and the rudders of others bent while the machines were being flown, and that in one case the rudder broke off owing to a gust of wind hitting it while it was standing on the ground. He also states that seriously damaged aeroplanes are strack off and replaced by new ones with new numbers. Formerly it was

and in one case, the fin was so arranged that it pivoted about its leading edges and could be cast off by the pilot on landing, but the complication was unnecessary if an adequate dihedral was used. He considered Mr. Bell's remarks on air brakes extremely sound, and should be closely attended to. This device should be all that Mr. Bell states, and should be powerful enough to produce a sensible reduction in the gliding angle. When once achieved, a notable advance would have been made towards greater speed and safer landing.

Mr. Holdberg commented upon the fin effect of the propeller on model aeroplanes and said that he had to abandon one type of machine because of this.

The Chairman (Col. Sykes), in proposing a vote of thanks to the lecturers, observed: confidence, skill and training were bound up together, and as efficiency increases greater confidence is obtained. A pilot must know a large number of things in order to fly well and these could only be obtained by continual practice. Pilots had increased greatly in efficiency, but machines had also improved enormously, as anyone who had visited Olympia could not have failed to note the great advance made in detail construction. For military purposes, he thought that a pilot should stick to one type of machine and become thoroughly master of it. In France the tendency had been to develop the small fast aeroplane, in Germany to obtain greater endurance, while in this country there was a combination between the two.

Mr. Hucks in his reply said that he still was of opinion that greater confidence had been the cause of the rapid progress made by pilots recently. He thought that there was probably no difference between the climbing speeds of a machine with and against the wind, and observed that the wings on his Bleriot were covered with rubber fabric with no dope which in wet weather became quite tight.

Mr. Gordon Bell briefly replied.

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customary to class as reconstruction the practical rebuilding of an aeroplane if the original engine remained available.

#### The Military Aeroplane Engine Competition.

WE understand that since the list of entrants for the Military Aeroplane Engine Competition appeared in FLIGHT for November 1st last, it has been increased by one, Messrs. Tips & Co. having entered a 100 h.p. rotary engine. This makes the total number of entrants 27, but some of the firms have entered more than one engine. Engines entered for the competition have to be delivered at the Royal Aircraft Factory, Farnborough, not later than Tuesday next.



Mr. Salmét and his passenger, Mr. T. Elder Hearn, just before their flight from Buc to Hendon last week. Mr. Hearn hopes to make the same trip as pilot himself in about three weeks' time.

# BRITISH NOTES OF THE WEEK.

## THE ROYAL FLYING CORPS.

THE following appointment was announced by the Admiralty on the 1st inst. :—

Commander N. Usborne, to the "Pembroke," additional, for command of the Kingsnorth Airship Station. To date April 1st.

The following appointments were announced in the *London Gazette* of the 3rd inst. :—

**R.F.C.—Military Wing.**—Lieut. Leslie Da C. Penn-Gaskell, 3rd Battalion the Norfolk Regiment, from the Reserve, to be a Flying Officer, and to be seconded. Dated March 18 h, 1914.

Second Lieut. Gordon N. Humphreys, Special Reserve, from the Reserve, to be a Flying Officer. Dated February 26th, 1914.

The following promotion was also announced in the *London Gazette* of the 3rd inst. :—

Capt. (temporary Major) Edward M. Maitland, the Essex Regiment, is granted the temporary rank of Lieutenant-Colonel whilst employed with the Naval Air Service. Dated April 1st, 1914.

## ROYAL FLYING CORPS (MILITARY WING).

WAR OFFICE summary of work for week ending April 4th, 1914 :—

**No. 2 Squadron. Montrose.**—The mileage of this squadron during the week amounted to 1,756 miles. The technical training of recruits recently postponed was continued.

**No. 3 Squadron. Netheravon.**—The Officer and N.C.O. pilots of this squadron were flying daily. Experiments in photography and range-finding were carried out.

**No. 4 Squadron. Netheravon.**—1,791 miles in all were flown by the pilots of this squadron in reconnaissance flights across country. Practice in landing in restricted areas was carried out.

**No. 5 Squadron. S. Farnborough.**—The Officer and N.C.O. pilots covered 1,115 miles in all during the week, chiefly on cross-country reconnaissance flights.

**No. 6 Squadron. S. Farnborough.**—The pilots of this squadron were flying daily over the country round Aldershot. The mileage totalled 1,436 miles. The N.C.O. pilots were given instruction in map reading from the air.

**Flying Depôt. S. Farnborough.**—Besides experimental flying, much work was done in connection with repairs on aircraft and M.T., and with technical training of recruits.

**General.**—The B.E. 2 type machines of the Military Wing were stopped flying on March 23rd pending the result of an enquiry into certain points of their construction, which was held on the 25th. As a result of the conference, at which the Director-General of Military Aeronautics, the Commandant Central Flying School,

and the Officer Commanding Royal Flying Corps (Military Wing) and all Squadron Commanders were present, the B.E. 2's were taken back into use the following day.

## Mr. Blackburn at Sheffield.

DURING the last week, Mr. Harold Blackburn, on his 80 h.p. Blackburn monoplane, has made numerous flights at Sheffield



From a photo by Mr. M. Purkis.

The remains of a wrecked waterplane at Cannes on March 16th, flown by M. Garros and which came to grief on the rocks during the same evening. The photograph shows the remnant of the machine after being partially dismantled, prior to its being carted away.

during a "Flying Week" organised by the *Sheffield Independent*. On Tuesday, Mr. Blackburn made a very fine flight over Sheffield at a height of over 4,000 ft. in half a gale. The weather was much too rough for passenger carrying on this day. The remainder of the week proved to be more favourable, and many passengers were given trips.

Early on Friday morning, Mr. Blackburn, accompanied by a lady passenger, flew to Chesterfield and back with the early morning edition of the *Sheffield Independent*, encircling the famous crooked spire of Chesterfield on the return journey.

## Mr. Hucks at Lincoln.

A VISIT from Mr. Hucks is an annual event in Lincoln. Last Wednesday, Friday and Saturday Mr. Hucks paid a third visit, this time to demonstrate "looping." On Wednesday, in glorious sunshine, he first took up his two-seater and showed what a lot can be learnt in twelve months' flying with the same type of machine. On the looper Mr. Hucks made seven loops and flew upside down for half a mile, incidentally reaching his 250th loop.

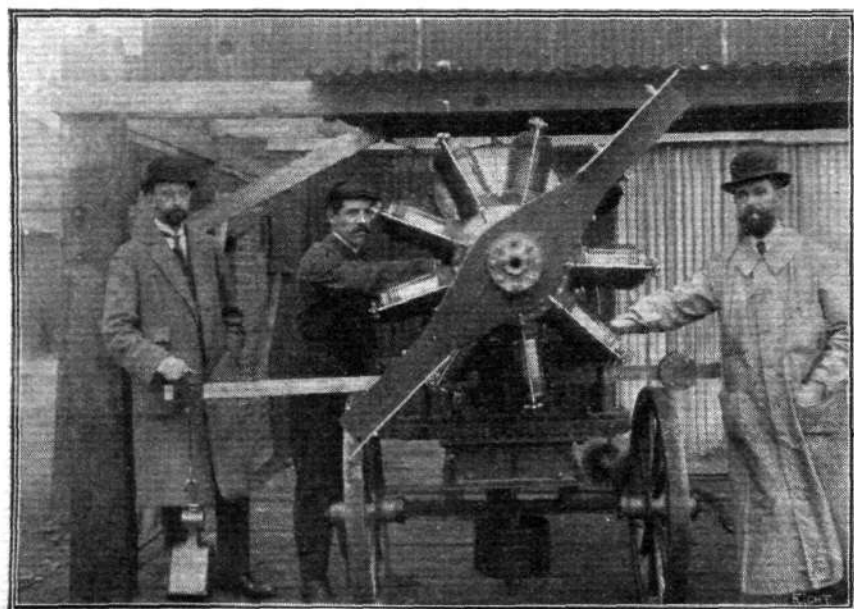
On Friday again, in ideal weather, Mr. Hucks added six loops to his total, and gave five people their aerial baptisms. Amongst these was a local newspaper representative, and his descriptive article next morning proved that the aeroplane has lost none of its power to inspire verbal flights.

On Saturday there was an immense crowd, both inside and out, and they were given a full afternoon's sport. The wind was choppy and blowing across the aerodrome, but 12 loops were accomplished, and on one occasion, Mr. Hucks flew inverted for over a mile. Four passengers were carried, including two ladies who were the first lady cyclists in Lincoln, and so achieved the distinction of being the first Lincoln ladies to fly.

This week Mr. Hucks is at Bristol. On Easter Monday he will be seen at Coventry. On Easter Tuesday and on Thursday, April 16th, and Saturday, April 18th, he will loop at the Leicester Aerodrome adjoining the Racecourse.

## Opening of the Daily Mail Tour.

AGAIN on behalf of the *Daily Mail* Mr. Salmet will this summer make a tour of the country, this time keeping to the coast. The tour commences on Easter Monday at Paignton, near Torquay, South Devon. Mr. Salmet will use two machines, one an Avro, and the other a Blériot waterplane.



The first British-built Gnome motor, which has been constructed for the Naval and Military Aeroplane Competition, and has now completed all its tests. On the left is Mr. Holt Thomas, who is responsible for the building and handling of the Gnome motor in England.



## FOREIGN AIRCRAFT NEWS.

### The Monaco Rally.

FIVE competitors actually made a start in the aerial rally on Thursday of last week: Verrier on a H. Farman starting from Hendon, Brindejone des Moulinais on a Morane from Madrid, Garros also on a Morane from Brussels, while Malard on a Nieuport and Moineau on a Breguet started from Buc. Verrier made a good trip down to Bexhill, but then found such a thick fog in the Channel that he decided to return. Brindejone, who left Madrid after making the necessary stops at Vittoria, Bordeaux and Albi, reached Marseilles. Garros, after making good progress by Calais and Dijon, had to descend at Orange owing to a backfire which set light to the machine, and in the sudden landing the chassis was damaged. Malard reached Bordeaux, and was so fatigued that he decided to wait there for the night; while Moineau, after making a stop at Chadignac owing to trouble with his petrol supply, had to stop at Cantinolles, close to Bordeaux, and in coming down his machine came into contact with a live electric wire, resulting in serious damage to it.

The following morning Brindejone completed the journey to Monaco, and his time for the complete course of 1,293 kiloms. was given as 16 hrs. 2 mins. 28 secs. The weather was very rough and the monoplane was damaged on alighting. Verrier made another start from Hendon, and after flying for about two hours passed by Calais, making his way south for Dijon. Unfortunately he was forced to make a stop at Chateaufort. On Saturday Hirth on an Albatros made a fine flight from Gotha to Marseilles with a passenger. No flying took place on Sunday, but on Monday morning Hirth started on the final stage to Monaco. In coming down at the control at Tamaris, however, the machine capsized and had to be towed ashore, the pilot and passenger being picked up by motor boats. The same day Brindejone set out to try and improve his time over the Italian course, and reached Genoa.

### A Night Flight by Rene Caudron.

ON a Caudron biplane fitted up with electric lights, Rene Caudron, with Galvin as passenger, made a lengthy flight after dark above Abbeville, Port Mahon and Rue on the 1st inst.

### Lyon to Montpellier on Farmans.

ACTING under orders from Col. Bouttieaux, Lieut. Gignoux and Adjutant Massonnaud, each on a Farman machine and accompanied by a mechanic, on the 31st ult., flew from Lyon to Montpellier, making a call *en route* at Avignon.

### Fatal Accident in Germany.

WHILE an aeroplane was being piloted by Lieut. Lankmeyer at a good height over the Schleisheim aerodrome near Munich, it suddenly collapsed and fell to the ground. The pilot was killed and the passenger, Lieut. Ruchti, very severely injured. It is stated that the accident was caused by the propeller bursting, leading to the breaking of some of the stay wires.

### Military Flying in Belgium.

ON the 31st ult., Lieuts. Liedel and Debueger made a circuit from Kiewit to Hasselt, Landen, Liege and back to Kiewit in an hour and three-quarters. The next day, Crombez, who is now doing his military training, flew from Brussels to Tournain, where he took up several passengers before returning to the Belgian capital. Also, on the 1st inst., Hagemans and Liedel, each on an 80 h.p. biplane, flew from Kiewit to Brussels.

### An Experimental Flight in Holland.

LAST week, Lieutenant. J. P. Bolton, of the Dutch Army, made a flight with a passenger at the Soesterberg Aerodrome with a view to finding out whether it was possible to observe the operation of quick-firers from the air. He found that when the gun was placed on sandy soil it was easily observed, but it could hardly be distinguished against a background of moorland. It was impossible to hear the sound of the firing owing to the noise of the engine.

### Three Hours' Trial by Schutte-Lanz.

ANOTHER long trial was made by the new Schutte-Lanz airship "SL2" on the 31st ult. Leaving her hangar at Mannheim at 11 a.m. she cruised along the Neckar valley for three hours.

### An Italian Height Record.

ON April 1st, at the military aerodrome near Milan, Lieut. Rolognesi beat the Italian height record by going up to 4,400 metres. The previous national record was 4,170 metres made on the 28th ult. by Capt. Matteucci.

### Paris to Rheims and Back on a Nieuport.

ON a Nieuport monoplane fitted with a 100 h.p. Gnome motor, Serjeant Piquet and a passenger flew on the night of the 2nd inst. from Villacoublay to Rheims. The next morning they returned to Villacoublay.

### Four New Loopers.

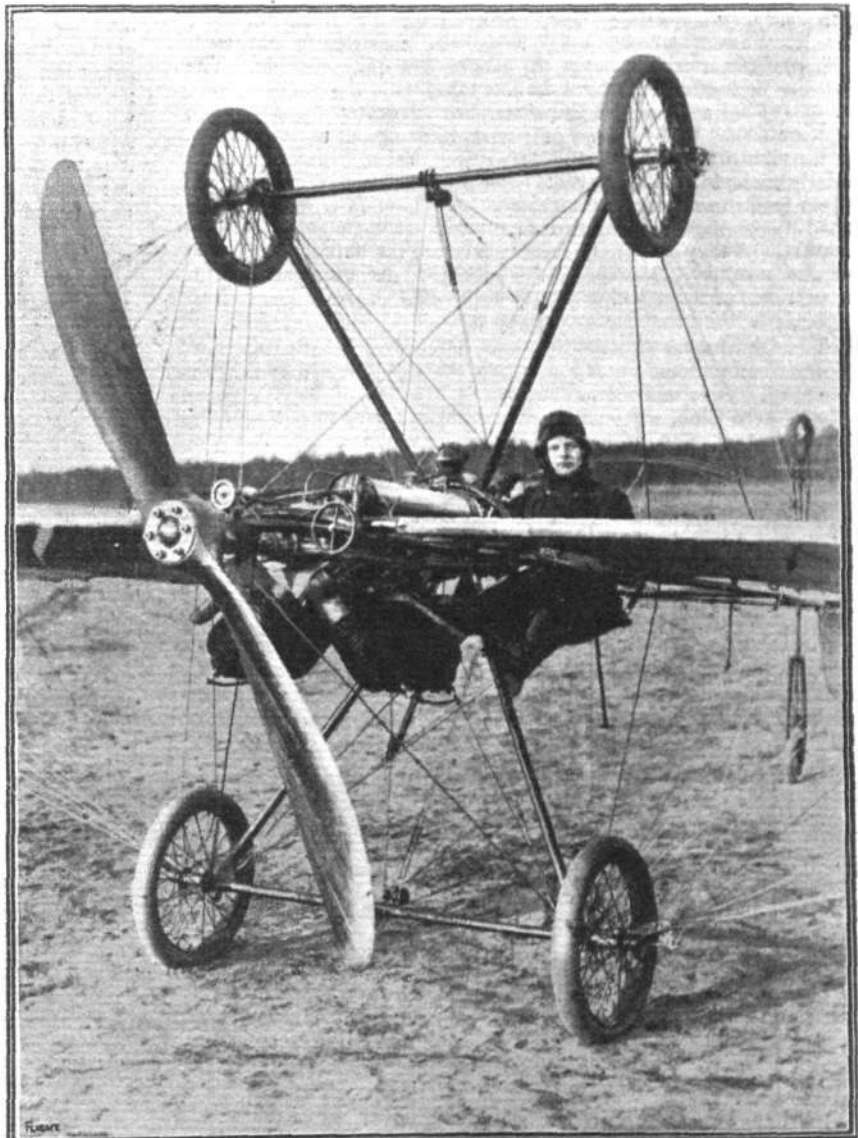
AT Buc on the 1st inst. Major Piazza of the Italian Army looped the loop on a Blériot, while at the Chateaufort ground close by Chemet carried out the manoeuvre on a Borel. The next day Conard looped the loop at the Blériot school at Buc, while Jupin did it at Chateaufort on a Bathiat-Sanchez monoplane.

### Looping on an Anzani-Caudron.

DURING a test flight on the 1st inst. at Crotoy with a standard Caudron biplane sold to the pilot Simon, Chanteloup made seven perfect loops. The machine is fitted with a 50-60 h.p. 6-cylinder Anzani motor with the ordinary type Zenith carburetter.

### Long Flight on a Blériot.

ON his Rhone-engined Blériot, Lieut. Gouin on the 2nd inst., made a flight from St. Cyr to Avor Camp and back, a round trip of 300 kiloms.



THE LATEST IDEA FOR LOOPING THE LOOP.—Pilot Gustav Tweer has been making trial flights on the above machine, constructed so that he can land upside down if necessary, having, as is seen, chassis and wheels both above and below the planes. He has been flying this machine at Bork.



Edited by V. E. JOHNSON, M.A.

### Aero Models at Olympia. The Flying Tests at Hendon.

THE flying tests of the models exhibited at Olympia were carried out at the Hendon Aerodrome and the Welsh Harp Lake, on April 3rd and 4th respectively. On Friday afternoon the classes tested were the single-screw r.o.g., the weight-carrying models, and the ornithopters. The day was an almost ideal one for model flying, and competitors had nothing to complain of on that score; there was both a nice breeze and plenty of sunshine.

#### CLASS 2B.

In the single-propeller r.o.g. class some very good flying was seen, although, so far as we know, the present record was not broken. Several of the models suffered considerably in their first flight from being over-elevated; and several instances also occurred of the wings "flapping" badly in the single-stick type, owing to the absence of any bracing wires. There was a considerable difference shown in the "steadiness of flight" exhibited by the different models. As a matter of fact, this struck us as being rather more pronounced than usual; but this is merely an impression. The average stability shown was certainly not better than usual; but a considerable number of very good flights were made. Personally, the writer was most struck by those of Mr. H. R. Weston, whose model flew both consistently and well. The stability or steadiness of the model was quite striking. The fuselage or motor rod was a hollow tube, with the rubber motor inside it; a feature which the writer has advocated on more than one occasion. The tube not only tends to damp out the oscillations of the vibrating as well as the untwisting rubber motor, but being totally enclosed, it also prevents those irregular air reactions which again tend to unsteady the machine. Aeromodelists who have not tried this method should do so, such tubes are commercially on the market, and they do not of necessity increase the building difficulties of the machine. Moreover, the rubber is out of sight and the appearance of the machine greatly improved.

#### CLASS 8.

The Ornithopter Competition once more fizzled out; this time, if our memory does not fail us, being the third time that this has occurred. Only one competitor, Mr. G. Hayden, of the Wimbledon Model Aero Club, who exhibited a model on the double-wing roller principle, put in an appearance, and as he was unable to obtain an unofficial trial flight of the qualifying 15 seconds duration, no official flights were made.

One fault that struck us most whilst watching some of Mr. Hayden's attempts was that the rear edge of the wings was not nearly flexible enough, more especially, of course, near the tips.

Whether the prize will ever be offered again we do not of course know, but several aeromodelists who have not so far tried it were struck by what they saw, and informed me that they should have a cut at it, if it was.

One thing that has very clearly been shown is that the matter is one which is not nearly so easy of accomplishment as many appear to have supposed, and if the prize is still to be won, whoever does

win it will richly deserve all he gets. That the principle is as good as the present one, or that it is one which can ever be applied successfully to full-sized practice, seems most unlikely. Yet there are the birds, and in model form at any rate something must be possible, and some knowledge would undoubtedly be gained from a successful result.

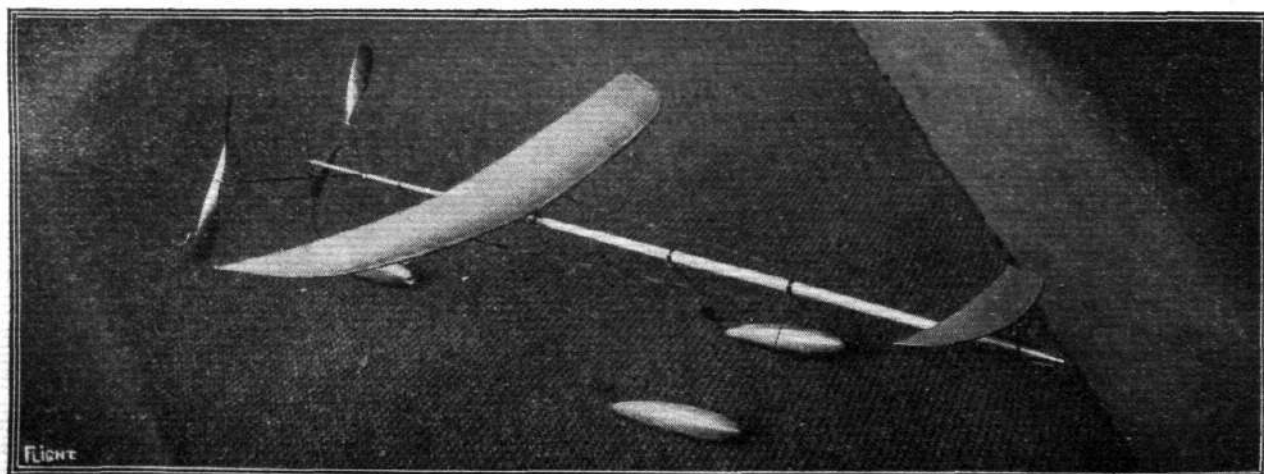
#### CLASS 6.

The weight-carrying competition was not only the most successful flying exhibition of Friday afternoon, but of the whole competitions. It was in every respect a complete success, and the results obtained go far to prove several points advocated more than once in this section of FLIGHT. The minimum weight of the models unloaded was one pound, and they had to carry an additional dead weight of a quarter of their own weight. The minimum permissible weight was therefore 1 1/4 lbs., i.e., 20 ozs. As a matter of fact, most weighed considerably more. In spite of all these adverse conditions, Mr. A. F. Houlberg succeeded in putting up a wonderful flight of no less than 1 min. 7 secs.—the best flight of the whole afternoon, beating even the 6-oz. single-propeller (unloaded) models, including one of his own. His other two flights were unfortunately only some 12 and 10 secs. respectively, which naturally had a very bad effect on his average. This once again emphasizes what has often struck the writer, that the twin-screw-behind tail-type model, even in the hands of an expert, is an uncertain model. Such a fine adjustment appears to be necessary owing to the extreme sensitiveness of this type of machine, especially if stability has been somewhat sacrificed for the sake of efficiency. However, this in no way affects the result, which we welcome most gladly, because it shows that when a large model is correctly designed for duration it can accomplish it, and even compete quite successfully against smaller models under more favourable conditions.

Mr. D. Easdale flew a large tractor machine some 30 ozs. in weight, and made three excellent and consistent flights, one of 36 secs. The stability exhibited by this model was really remarkable, and the manner in which it both launched itself and descended was everything that could be desired. Moreover, Mr. Easdale was placed at a considerable disadvantage, because some days before, whilst trying the model on Wimbledon Common, it landed in the midst of a number of mounted Territorials, and a model is not improved by having a squadron of cavalry ride over it.

Mr. L. H. Slatter's model was a trifle over elevated in his first flight, but succeeded in accomplishing a duration of 33 secs.; his second flight, although of rather less duration, viz. 30 secs., was a very good one. In his third flight, the model showed slight lateral instability, but it was a very good flight of 38 seconds' duration. Mr. F. W. Jannaway's model got up very nicely, flew well and landed well on two occasions, his best duration being 28 seconds. In his third flight, if we remember correctly, the model was over elevated and the flight was of the usual parabolic type—duration 5 seconds.

Mr. P. G. Cox, who was flying a very heavy model, succeeded in obtaining in his second flight a duration of 24 seconds, a decidedly good result under the circumstances; the chief fault in his model



Mr. A. F. Houlberg's hydro-aeroplane Olympia model.

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was a lack of lateral stability, the model oscillating rather badly from side to side. When Mr. Cox has overcome this the model will be greatly improved.

Mr. H. R. Weston unfortunately smashed his model at the first attempt, owing to its turning to the right and running off the board before it had risen. There was one weak point in the construction where the skid joins the lower longitudinal, and the ground found it out.

On April 4th, the power-driven models, the hydro-aeroplane, the twin-propeller r.o.g. machines and the single-screw tractor competitions were all carried through under far less favourable weather conditions.

#### CLASS 2A.

The twin-screw rubber driven r.o.g. machines gave as usual a very good account of their flying capabilities. Most of the models were more or less wet, which naturally did not improve their duration powers. In spite of this Mr. G. Hayden (Wimbledon Model Club) succeeded in accomplishing a duration of 2 mins. 7 secs., which although not a record is undoubtedly extremely good considering the state of the weather. The number of competitors was very large, and many good flights were made; but there was nothing of a particularly striking or novel character; in fact, so much has already been done with this particular type of model that it is difficult to see what remains to be done.

#### CLASS 5.

In this class—the single-screw tractor class—some very good flying indeed was seen, many of the models showing excellent stability and quite a good gliding angle as well. Most of the models, in fact, nearly all of them, had a single-stick fuselage, which is not pretty in a tractor. We did not see all the flying, but, so far as we saw it, the ones with the covered-in fuselages did not give a good account of themselves; they appeared to be underpowered. Naturally the adverse weather conditions affected them more than their single-stick brethren.

#### CLASS 3.

The hydro-aeroplane flying tests were carried out on the Welsh Harp Lake in the afternoon; the weather was more propitious than during the morning, and some good flying was seen. In this instance the present record was broken by the holder, Mr. L. H. Slatter, who succeeded in accomplishing a duration of 67 secs. Generally speaking, the flying, whilst quite good, was of the usual character. There was, however, one very striking difference. One of the models, when rising from the landing stage, at the third trial, this time on its wheels, was over-elevated, soared high up into the air at a steep angle, became perpendicular, inclined backwards, and finally looped the loop in fine style, alighting right way up on the water, without upsetting; it then skimmed along, rose off the surface of the water, and after making a short normal flight, finally alighted correctly on land, an incident which, so far as we know, has never happened before, and it will probably be a long time before such an event happens again. Thus has a model once again surpassed its full-sized prototype.

#### CLASS I.

The power-driven model flying tests, from a competitor's point of view, were of an absolutely heart-rending character. The minimum qualifying duration was 30 secs. In spite of the fact that no less than some eleven power-driven models of varied type actually came up to the scratch, not one of them could do it—the best flight being one of 23 secs. [There is some uncertainty about the exact time, but in any case it was not more.] The smashes were appalling.

What was the reason of such a fiasco? It was very largely due to the totally inadequate provisions that were made for the self-launching of the models. The board provided was neither long enough nor broad enough, and even when it was seen that such was the case no effort was made to attempt to remedy it. Even a hangar door might have done it, but no attempt was made to get one.

The board was long enough for the lightly-loaded compressed air models, but none of these could accomplish anything in the way of actual flight, and the most promising were quickly *hors de combat* through too violent impact with mother earth or collisions with too curious spectators; no roping-off was attempted.

Neither Mr. H. H. Groves, who had two steam-driven models, nor Mr. C. L. Pratt, who also had a model of the same type, could rise in the length of board provided. All three models were in good form and the power plant working well each time, and we have not the slightest hesitation in saying that if these could have only got off they would have done something. On the rough ground they could do nothing. Mr. D. Stanger wisely forbore not to try off the board, but off the rough ground, his models being larger and fitted with bigger wheels. In the end both his machines were smashed more or less; the second one he smashed simply and solely on account of the ground, over which it taxied, upset and smashed before the correct elevation could be obtained. Hurriedly

mended, Mr. Stanger once again tried, and this time made a very fine flight of some 23 seconds duration, but the machine was not in a fit state to fly, and it landed badly and broke its fuselage clean in two.

Mr. C. F. Fearn was unable to get his petrol motor to run properly, and so this large model made no official attempt at a flight.

To expect aeromodellists to build expensive power-driven models, taking months in some cases to build: to tune up their complicated and delicate motors, only an expert can do it; and then when they come forward prepared to take a sporting chance, because after all it is a sporting chance, of a successful issue and an undamaged model; and not to give them a fair chance of showing what their model can do; all and every one of them, is certainly encouraging the more advanced type of model with a vengeance. Obviously the only way out of the difficulty is the abolishment of the board, once and for all. Even some quite small clubs have passed beyond this stage of the art. Have a patch of grass some 40 or 50 yards square cut and rolled, and compel every model, rubber-driven or otherwise, to rise from it. It will compel the rubber-driven model to use wheels which are wheels, and it will provide the power-driven model with what it requires, a sufficient distance to rise in, more especially if there be, as there was on Saturday, an absence of wind to assist them. The power-driven model competitors have our sincere sympathy.

#### Canard-Type Models.

"I have been reading with interest the correspondence in *FLIGHT* re Canard-type aeroplanes," writes Mr. H. E. Hervey, "but cannot say that I agree with many of the statements made against this type of machine, especially Mr. W. E. Evans' remark, 'that the Canard-type model has practically received its death-blow as far as scientific models are concerned.' Experiments with any type of model, however unpromising that type may seem, will often give really useful results. I cannot myself see the difficulty in designing a covered-in fuselage suitable to this type. I have seen one or two twin-propeller models with covered-in fuselages, and I have myself constructed six or seven single-propeller models with covered-in fuselages, and have had very good results with them. Although the fuselages on these machines may not have given a perfect streamline, they were, at any rate, as good as a great many used on present-day full-sized tractor machines."

Mr. H. Eaton also writes: "Re your remarks on Canard-type models, I quite agree with Mr. Roberts. About a year ago I made a model of this type, and I am pleased to say I had some fairly good flights with it; as far as I can remember, the best duration was 28 secs., and the distance 120 yards. The machine showed great stability, which, I think, was due to the covered-in fuselage. I shall be pleased to supply further particulars to any readers who are interested."

Perhaps the best and only answer which is necessary with respect to the above is that not a single canard-type covered-in fuselage model was exhibited at Olympia, or, at least, the writer failed to find one. We do not, of course, quite know what Mr. W. E. Evans intended to convey by his remark. It appears to the writer that save for sporting purposes and junior competitions the canard-type model has served its purpose, and could well be, if not dropped, certainly relegated to a subordinate position for reasons already stated. It has proved a most valuable servant, but that is no reason why it should be allowed to become a ruling taskmaster. For anyone taking up model aeroplaning it is an excellent model to commence with, because it is the easiest with which to get successful results. For this reason, if for no other, it will always be popular. It must not be forgotten that an enormous number of experiments have been made with this type, far more so than with any other. The most valuable type of model is naturally that which promises the best as applied to full-sized design, at present for military and naval purposes.



#### KITE AND MODEL AEROPLANE ASSOCIATION.

##### Official Notices.

**International Aero Exhibition. Flying Tests.**—The flying tests of models in connection with the International Aero Exhibition took place at the London Aerodrome (by kind permission of the Grahame-White Aviation Co.), on Friday and Saturday, April 3rd and 4th, and the hydro. contest at the Welsh Harp. The competitions were keenly contested, and the full results will be published in next issue. The team competition, as far as is known, shows Wimbledon 1st, Leytonstone 2nd. It was pleasing to see some of the well-known aviators present at all the trials, and among those who attended the Welsh Harp Mr. Gordon Bell was noticed.

**General Meeting.**—The annual general meeting will be held at Caxton Hall, on Thursday April 16th, at 8 p.m., and the notices will be sent out during the week, and it is hoped that all members will endeavour to be present. Any notice of motion or nominations must be in the hands of the secretary by the 14th. Any suggestions for competitions should be forwarded to the hon. sec. at once, and it is hoped that several will be received from members and friends who would like to see any particular competition held, as now is the time, so that rules committee can decide on programme.

27, Victory Road, Wimbledon.

W. H. AKEHURST, Hon. Sec.

## AFFILIATED MODEL CLUBS DIARY.

CLUB reports of chief work done will be published monthly for the future. Secretaries' reports, to be included, must reach the Editor on the last Monday in each month.

**Leytonstone and District Aero Club (64, LEYSPRING ROAD).**

APRIL 12TH, at 6.30 a.m. and 10 a.m., flying on Wanstead Flats as usual. If wet at 10, meet at clubroom.

**Paddington and Districts (77, SWINDERRY ROAD, WEMBLEY).**

GOOD FRIDAY, practice flying at Sudbury; April 11th, scratch competition for twin-propeller models: weight, 6 ozs.; loading, 4 ozs. Prizes, 3s., 2s., 1s., for best averages. Easter Monday, handicap competition for twin propeller models, same weight and loading. Prizes, 2s., 1s. 6d., and 1s. Scratch competition for single-screw models. Weight, 6 ozs.; loading, 4 ozs. Prizes, 2s. and 1s.; average of three flights.

**Sheffield Ae.C. (41, CONISTON ROAD, ABBEYDALE, SHEFFIELD).**

APRIL 11TH, tractor biplane contest postponed owing to members having to make special machines for 4th inst. April 13th, at 2.30 p.m., at Standhouse Aerodrome, Intake (weather permitting only), first contest for weight-carrying machines, i.e.g. and hand-launched, novices and juniors, for medals presented by Mr. C. F. W. Cudworth.

**Wimbledon and District (165, HOLLAND ROAD, W.).**

APRIL 10th, 11th and 12th, flying at 11 o'clock and 2.30. April 13th, sealed handicap competition for Olympia machines; time will be announced later. Members are reminded that subscriptions are now due.

## UNAFFILIATED CLUBS.

**Ilford Model Ae.C. (83, ENDSLEIGH GARDENS, ILFORD).**

APRIL 11TH, flying as usual at Hog Hill, Hainault Forest, Chigwell Row, at 9.30 a.m. (weather permitting). There will be no official flying meeting on Easter Monday.

**Liverpool Aero Research Club (62, CEDAR GROVE, LIVERPOOL).**

APRIL 11TH, Sefton Park, 3.30 p.m. Easter Monday, Sefton and Stanley, 10.30 a.m. and 3.30 p.m. April 14th, general meeting, 62, Cedar Grove, 8 p.m. All urgently requested to attend.

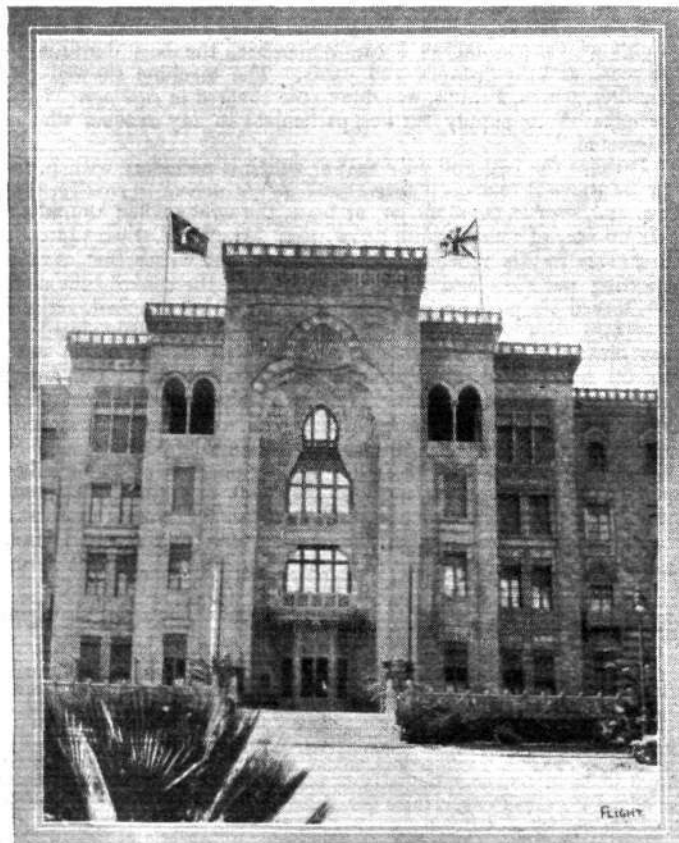
**S. Eastern Model Ae.C. (1, RAILWAY APPROACH, BROCKLEY).**

APRIL 10TH, Blackheath, 6.30 to 10 a.m.; 11th, Woolwich Common, 3.30 to 6.30 p.m.; 12th, Blackheath, 6.30 to 10 a.m., Lee Aerodrome, 10.30 a.m. to 1.30 p.m.; 13th, Blackheath, 6.30 to 10 a.m., and Lee Aerodrome, 10.30 a.m. to 1.30 p.m.

## CORRESPONDENCE.

### Rotary Engines.

[1851] It is not at all clear to me how the Statax engines described in FLIGHT convert the force of the explosions into rotary movement. In other words, the inclined rotary disc to which what one might call the big-ends of the connecting-rods are fixed does



The above interesting photograph of the Heliopolis Palace Hotel, Heliopolis, Cairo, comes from Mr. W. Oswald Watt. He points out that the wind was blowing straight over the back of his camera, and the flags are 19 yds. apart, whilst 45 to 50 yds. in the rear and immediately between them, is a fair-sized dome. He asks, can anyone explain the reason of the flags flying in opposite directions?

not seem at all an efficient method of converting reciprocating into rotary movement. Perhaps someone amongst your readers better able to deal with the matter than myself would compare this combination with the more generally used crank-shaft, pointing out the advantages and disadvantages of each.

Leeds.

MECHANIC.

[The fundamental principle involved in the design of the Statax engine is that the pistons are connected to a "swashplate" attached to a central shaft, and various constructions have been evolved at different times embodying this principle. As in the conventional engine, there is no tendency to rotary movement when the pistons are at the ends of their strokes, but so soon as the dead centre is passed, the thrust due to the pressure on the piston is transmitted to the inclined rotating ring to which the connecting-rods are attached, and because this ring is inclined the cylinders, &c., are caused to rotate.

There is no reason, neglecting all structural considerations, why this method of converting rectilinear into rotary motion should be inferior to the usual construction.—ED.]



## AERONAUTICAL SOCIETY OF GREAT BRITAIN.

### Official Notices.

1. **Meeting.**—The eleventh meeting of the present session will be held on Wednesday, April 15th, at 8.30 p.m., when Brigadier-General D. Henderson, C.B., D.S.O., will preside. Mr. Griffith Brewer, A.F.Ae.S., and Lieut. J. N. Fletcher, R.F.C., will read a paper, to be followed by a discussion, on "The Value of Ballooning as a Training for Flying."

Tickets for visitors, not introduced, may be obtained from the Secretary, 11, Adam Street, Adelphi, W.C.

2. **Election of Chairman.**—Maj.-Gen. R. M. Ruck, C.B., has been elected Chairman of Council for 1914-15.

3. **Appointment of Committees.**—The following Committees have been appointed:—

(a) **Inventions Committee.**—T. W. K. Clarke, B. G. Cooper, and Col. H. E. Rawson, C.B., R.E.

(b) **Library Committee.**—H. F. Lloyd and B. G. Cooper.

(c) **Research Committee.**—Harris Booth, T. W. K. Clarke, B. G. Cooper, Col. J. D. Fullerton, B. Melvill Jones, Archibald R. Low, Mervyn O'Gorman, F. Handley Page, and A. P. Thurston.

(d) **Finance Committee.**—Maj.-Gen. R. M. Ruck, A. P. Thurston, and B. G. Cooper.

(e) **Technical Terms Committee.**—L. Bairstow, Harris Booth, A. Graham Clark, T. O'B. Hubbard, A. R. Low, Mervyn O'Gorman, C.B., Dr. T. E. Stanton, and Lieut.-Col. F. H. Sykes. B. G. COOPER, Secretary.



## Cellon Loopers and the Desoutter Fund.

WITH reference to the letter quoted in Eddies last week from a visitor to Olympia who grumbled at being charged 3d. for one of the Cellon loopers, Mr. Wallace Barr subsequently received another letter, dated previous to the publication of last week's FLIGHT, in which the grumbler apologised and explained that he did not see the notice re the Desoutter Fund. By way of atonement for his meanness he sent along 12 penny stamps. The amount realised by the sale of the Cellon gliders was £11 1s. 5d., and 5 francs.



## Aeronautical Patents Published.

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Published April 2nd, 1914.

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